

4. On the Mollusca procured during the 'Lightning' and 'Porcupine' Expeditions, 1868-70. (Part VII.<sup>1</sup>) By J. GWYN JEFFREYS, LL.D., F.R.S., F.Z.S.

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(Plates IX. & X.)

GASTROPODA ; Family LITTORINIDÆ (*continued*).

RISSEA.

A. ALVANIA. Cancellated ; outer lip usually strengthened by a rib, and sometimes notched within.

- ✓ 1. RISSEA CANCELLATA, Da Costa.

*Turbo cancellatus*, Da Costa, Br. Conch. p. 104, pl. viii. f. 6, 9.

*R. cancellata*, B. C. iv. p. 8 ; v. p. 207, pl. lxvi. f. 3.

'Porcupine' Exp. 1870 : Atl. St. Vigo B., 36, Tangier B. ; Med. Adventure Bank.

*Distribution*. Upper Norway (*McAndrew*)! Stornoway to the Channel Isles, Atlantic coasts of France and Spain, Mediterranean, Adriatic, Mogador, Madeira, and Canaries ; 0-112 fms.

*Fossil*. Miocene : Modena, N.W. Germany, Bordeaux Basin, Madeira. Pliocene : Italy. Post-tertiary : Scotland, Ireland, and Selsea.

*Turbo cimex* of Donovan and older British authors (not of Linné), *R. crenulata* of Michaud, and other obsolete synonymins. Not *R. cancellata* of Desmarest, which is *R. cimex*.

- ✓ 2. RISSEA CALATHUS, Forbes and Hanley.

*R. calathus*, F. & H. British Mollusca, iii. p. 82, pl. lxxviii. f. 3 : B. C. iv. p. 11 ; v. p. 207, pl. lxvi. f. 4.

'Porcupine' Exp. 1870 : Atl. St. 16, Tangier B. ; Med. Rasel Amoush.

*Distribution*. Drontheim and Bergen, Hebrides, Ireland and Isle of Man, Atlantic coasts of France and Spain, Mediterranean, Adriatic, Canaries (var. *manzoni*) ; 5-200 fms.

*Fossil*. Pliocene : Coralline Crag, Italy, Rhodes.

Allied to *Turbo acinus* of Brocchi and *R. venus* of d'Orbigny, both of which are Miocene species.

Young or immature specimens of the present species agree in every particular with Philippi's description and figure of his *R. reticulata* ; but that name had been preengaged by Montagu for the next species. It is somewhat variable in size and sculpture.

<sup>1</sup> For Part I. see P. Z. S. 1878, p. 393 ; for Part II. see P. Z. S. 1879, p. 553 ; for Part III. see P. Z. S. 1881, p. 693 ; for Part IV. see P. Z. S. 1881, p. 922 ; for Part V. see P. Z. S. 1882, p. 656 ; and for Part VI. see P. Z. S. 1883, p. 87.

✓ 3. *RISSOA RETICULATA*, Montagu.

*Turbo reticulatus*, Mont. Test. Brit. p. 322, t. 21. f. 1.

*R. reticulata*, B. C. iv. p. 12; v. p. 207, pl. lxvi. f. 5.

'Porcupine' Exp. 1870: Atl. St. 10, Vigo B., 36; Med. 55, G. Tunis, Adventure Bank, off Rinaldo's Chair.

*Distribution.* Finmark to the Mediterranean and Adriatic, Canaries, (*McAndrew* and *Manzoni*); 7-300 fms.

*Fossil.* Miocene: Vienna Basin (as *R. mariae*). Pliocene: Coralline Crag, Italy, and Rhodes. Post-tertiary: W. Scotland.

*R. mariae* of d'Orbigny appears to be a variety of the present species, which is certainly *R. beanii* of Hanley and *R. textilis* of Philippi. Not *Alvania reticulata* of Philip Carpenter, which is a Pacific species.

✓ 4. *RISSOA CIMICOIDES*, Forbes.

*R. cimicoides*, Forb. in Rep. Br. Assoc. for 1843, p. 189: B. C. iv. p. 14; v. p. 207, pl. lxvi. f. 6.

'Lightning' Exp. St. 2, 5.

'Porcupine' Exp. 1869: St. 6, 10, 14, 15, 25. 1870: Atl. 1, 2, 3, 9, Vigo B., 13, 16, 17a, Setubal B., off C. Sagres, 26-30, 36; Med. 45, Cartagena B., 50, 55, Benzert Road, Adventure Bank, off Rinaldo's Chair.

*Distribution.* Hammerfest to the Mediterranean and Adriatic; 2-640 fms.

*Fossil.* Miocene: Central Italy (*Manzoni*), Madeira (*Mayer*). Pliocene: S.W. France, Italy. Post-tertiary: Norway, W. Scotland; 0-100 ft.

Some specimens are smaller than others from different localities, and have a shorter spire with coarser or finer sculpture. *R. sculpta* of Philippi corresponds with the former, and *R. intermedia* of Aradas with the latter; so that both may be the same species, as well as that of Forbes. The names given by Forbes and Philippi were published in 1844, that of Aradas in 1847.

✓ 5. *RISSOA JEFFREYSI*, Waller.

*R. jeffreysi*, Wall. in Ann. & Mag. N. H. ser. 3, xiv. p. 136: B. C. iv. p. 15; v. 207, pl. lxvi. f. 7.

'Lightning' Exp. St. 2, 5.

'Porcupine' Exp. 1869: St. 16. 1870: Atl. 3, 3a, 12, 36.

*Distribution.* Varanger Fiord to Shetland, Gulf of Gascony, Bay of Biscay ('Travailleur' Exp. 1881), Straits of Messina (*Granata*), Algiers (coll. Weinkauff); 40-363 fms.

*Fossil.* Pliocene: Pezzo in Calabria (*Tiberi*)!, Messina (*Sequenza*)! Post-tertiary: Norway (*Crosskey* and *Robertson*)!; 30-100 ft.

*R. sororcula*, *Granata*, ex typo!

The late Mr. McAndrew showed me specimens of this and the last species which he had received from a correspondent in the United States as North-American; but this locality requires confirmation, as neither species has been recorded from it. The present species

differs from *R. scrobiculata* of Möller in being cancellated and in the peculiar sculpture of the apex.

✓ 6. *RISSOA DICTYOPHORA*, Philippi.

*R. dictyophora*, Ph. Moll. Sic. ii. p. 128, t. xxiii. f. 11.

'Porcupine' Exp. 1870: Med. St. Benzert Road, Adventure Bank.

*Distribution.* Mediterranean and Adriatic; 40–120 fms.

*Fossil.* Pliocene: Calabria.

A variety of this species is *Alvania weinkauffi* of Schwartz v. Mohrenstern.

✓ 7. *RISSOA FISCHERI*<sup>1</sup>, Jeffreys. (Plate IX. fig. 1.)

SHELL oval, rather solid, opaque and lustreless: *sculpture*, 16–18 strong longitudinal ribs on the last whorl, 14–16 on the penultimate, 10–12 on the next, and merely traces or none at all on the second whorl, the top whorl or apex being smooth; these ribs are crossed by equally strong spiral ribs or ridges, of which there are 6–8 on the last whorl, 4 on the penultimate, and 3 on the next whorl, the succeeding or second whorl being marked with a few spiral striæ; the points of intersection are noduled or prickly, but only as to the four upper spiral ridges on the last whorl in consequence of the longitudinal ribs not extending to the lower or basal spiral ridges; the interstices are oblong: *colour* pale yellowish or dirty white: *spire* somewhat tapering: *whorls* 5, moderately convex, rapidly increasing in size, the last occupying half the spire; the apex is prominent but twisted: *suture* deep and angulated: *mouth* nearly round: *outer lip* thin, smooth inside: *inner lip* reflected on the pillar, which is not umbilicated nor perforated. L. 0.1, B. 0.05.

'Porcupine' Exp. 1870: Atl. St. 26, 36, Tangier B.

*Distribution.* Off Tunis (*Nares* and 'Shearwater' Exp.); 30–120 fms.

*R. calathus* is more slender, and has a longer spire and slighter suture. The present species is somewhat like *R. tenuicostata* of Seguenza (as described by Granata); but the sculpture is different. In the latter species it is finer, and there are fewer longitudinal and spiral ribs or striæ, viz. 4 spiral striæ on the last or body-whorl, and 2 on the penultimate and next whorls; *R. fischeri* is strongly and regularly cancellated, and it has 6–8 spiral striæ on the last whorl, and 3 or 4 on the penultimate and next whorls. *R. etneensis* of Aradas and Benoit is only half the size of the present species, and it has closer and more delicate sculpture. *R. fischeri* differs from *R. dictyophora* var. *weinkauffi* in the same respects as it does from *R. tenuicostata*, as well as in having a shorter spire and a proportionally larger body-whorl. It is also allied to *R. zelandica*; but that species is of a more oblique shape, it has not the tuberos and cancellated sculpture of *R. fischeri*, the outer lip is expanded, and the spiral striæ at the base are fewer and stronger. *R. clathrata* is a larger

<sup>1</sup> Named in honour of Dr. Paul Fischer, whose conchological labours and especially his excellent 'Manuel de Conchyliologie' are so well known.

and stouter shell and has much coarser sculpture. Philippi's figure represents quite another species, and he describes the outer lip as thickened and grooved within.

8. *RISSOA LANCIE*, Calcare.

*R. lancie*, Calc. Moll. viv. e foss. Sicilia, 1845, p. 29, t. 4. f. 12.

*R. philippiana*, Jeffr. in Ann. & Mag. N. H. 1856, p. 182, pl. 11. f. 4, 5.

'Porcupine' Exp. 1870: Med. St. Algeciras B., Adventure Bank.

*Distribution*. Mediterranean and Adriatic; var. *Alvania tessellata*, (Schwartz v. Mohrenstern); Algiers (*Weinkauff*); 8-10 fms.

Although Calcare's description is too short and does not give all the characters, it sufficiently agrees with mine, and I therefore adopt his name, which is prior in date.

✓ 9. *RISSOA CANARIENSIS*, d'Orbigny.

*R. canariensis*, d'Orb. Moll. Can. 1837, p. 78, pl. vi. f. 5-7.

'Porcupine' Exp. 1870: Atl. St. 16. A single specimen.

*Distribution*. Mediterranean from the Gulf of Marseilles to Sicily, Canaries, and Madeira; 0-120 fms.

*Fossil*. Miocene: Madeira (*Mayer*).

✓ 10. *RISSOA PUNCTURA*, Montagu.

*Turbo punctura*, Mont. Test. Brit. p. 320, t. 12. f. 5.

*R. punctura*, B. C. iv. p. 17; v. p. 207, pl. lxvi. f. 8.

'Porcupine' Exp. 1869: St. 18. 1870: Atl. 3a, Vigo B., 36, Tangier B. (var.); Med. 50, Adventure Bank. The Tangier specimens are smaller and slender, with more delicate sculpture.

*Distribution*. Finmark and Faroe Isles to the Mediterranean and Adriatic, Canaries (*McAndrew*); 0-130 fms.

*Fossil*. Pliocene: Coralline Crag, S.W. France, Italy, Rhodes. Post-tertiary: Scandinavia, Ayrshire, Portrush, Selsea; 0-100 ft.

There are some obscure and obsolete synonyms.

✓ 11. *RISSOA PARVULA*<sup>1</sup>, Jeffreys. (Plate IX. fig. 2.)

SHELL oblong, comparatively solid, semitransparent, nearly lustreless: *sculpture* consisting of about 20 longitudinal and somewhat curved riblets on the body-whorl, which are not continued much below the periphery; each of the two succeeding whorls has 14 to 16 similar riblets; all of these are crossed by spiral riblets or striæ, of which there are about 10 on the body-whorl and 4 to 6 on the penultimate and next whorls; the topmost whorl is encircled by microscopic lines; the intercrossing of the longitudinal and spiral riblets does not form tubercles or prickles at the points of junction; the interstices are square: *colour* pale yellowish: *spire* rather slender: *whorls* 4, slightly convex, the last occupying two thirds of the spire; apex blunt: *suture* distinct, but not deep: *mouth* more round than

<sup>1</sup> Very small.



oval: *outer lip* thin, smooth within: *inner lip* somewhat reflected and thickened on the lower part of the pillar, which is imperforate. L. 0.075, B. 0.045.

'Porcupine' Exp. 1870: Atl. St. Tangier B. Two specimens.

Differs from *R. punctura* in being more slender or narrower and of an oblong shape; and the sculpture is not reticulated.

✓ 12. *RISSOA SUBSOLUTA*, Aradas. (Plate IX. fig. 3.)

*R. subsoluta*, Ar. Mem. di Malac. Sic. iii. (1847), p. 21.

'Porcupine' Exp. 1870: Atl. St. 1, 3, 9, 13, 14, 16, 24, 26.

*Distribution*. Bay of Biscay ('Travailleur' Exp. 1880)!; Mediterranean (*Nares*, *Spratt*, *Monterosato*); 108-310 fms.

*Fossil*. Pliocene: Messina (*Seguenza*)!

In some specimens (as described by Aradas) the longitudinal striae partially disappear, or are entirely wanting, on the last and penultimate whorls.

The sculpture of this pretty little shell is much finer than that of the next species (*R. testæ*), and the spire is more bluntly pointed. I described it in my paper on Mediterranean Mollusca (Ann. & Mag. N. H. 1870) as the variety *obtusa* of that species under the name of *R. abyssicola*. At one time I considered the species named and described by Aradas the same as that which I now propose to call *deliciosa*, and which will be described and figured in this paper; but I have since been enabled to rectify the mistake by the examination of a typical specimen of *R. subsoluta*, which I received from the late Professor of Catania. The present species is *R. elegantissima* of Seguenza.

✓ 13. *RISSOA TESTÆ*, Aradas & Maggiore. (Plate IX. fig. 4.)

*R. testæ*, Ar. & Magg. Cat. rag. Catania, 1844, p. 207.

'Porcupine' Exp. 1869: St. 2, 3, 10, 16. 1870: Atl. 3a, Vigo B., Setubal B., 22, 24, off C. Sagres, 26-34, 36; Med. 40, 41, 45, Cartagena B., 50, Benzert Road, Adventure Bank, off Rinaldo's Chair. In most of the first-named Stations the variety *abyssicola* is the prevalent form. That variety is more oval, and has a rather more oblique spire and finer sculpture than the typical form; it is described and figured in the 'British Mollusca,' vol. iii. p. 86, pl. lviii. f. 1, 2, and (animal) pl. JJ. f. 3, and in "British Conchology," vol. iv. p. 19, and v. p. 207, pl. lxvi. f. 9.

*Distribution*. Typical form: Atlantic coasts of France and Spain to the Mediterranean and Adriatic; 11-640 fms. Var. *abyssicola*: Arctic, Norway to Mizen Head, Co. Cork; 30-300 fms.

*Fossil*. Typ. Pliocene: Italy. Var. *abyssicola*. Post-tertiary: Christiania district (*Crosskey* and *Robertson*).

In the above-cited paper on Mediterranean Mollusca I named the present species the variety *conformis* of *R. abyssicola*, not being then aware of the publication by Aradas and Maggiore. I afterwards received from the lamented Professor Aradas typical specimens of *R. testæ*, which not only confirmed my opinion that it was the

same as my variety of *R. abyssicola*, but also satisfied me that the latter was another variety of *R. testæ*, which is a much older name than *abyssicola*.

*Alvania asperula* of Brugnone appears to be the young.

B. FLEMINGIA. Ribbed lengthwise and spirally striated ;  
outer lip thickened and reflected.

14. RISSOA ZETLANDICA, Montagn.

*Turbo zetlandicus*, Mont., in Tr. Linn. Soc. xi. p. 194, t. xiii. f. 3.

*R. zetlandica*, B. C. iv. p. 20 ; v. p. 207, pl. lxxvii. f. 1.

'Lightning' Exp. : St. 2, 5.

'Porcupine' Exp. 1869 : St. 13, 14. 1870 : Atl. 2, 3, 13, 16, 17a, off C. Sagres, 27, 28 ; Med. Adventure Bank.

*Distribution*. Loffoden I. to the Mediterranean and Adriatic ; 12-200 fms.

*Fossil*. ? Miocene : Vienna Basin (*Hörnnes*), Transylvania (*Hauer* and *Stache*), Modena (*Manzoni*). Pliocene : Coralline and Red Crag, Biot, and Italy. Post-tertiary : Norway (*Crosskey* and *Robertson*) ; 100 ft.

Among the synonyms are *R. carinata* of Aradas and *R. canaliculata* of Philippi. This species is probably not the *R. zetlandica* of Hörnnes, which has a shorter spire and more tumid shape, with stronger and coarser sculpture ; *R. scalaris* of Dubois comes nearer to our species. *R. crispa* of Watson, from Madeira, is more closely allied to *R. zetlandica*.

15. RISSOA COSTATA, Adams.

*Turbo costatus*, Ad. in Tr. Linn. Soc. iii. p. 65, t. xiii. f. 13, 14.

*R. costata*, B. C. iv. p. 22 ; v. p. 207, pl. lxxviii. f. 2.

'Porcupine' Exp. 1870 ; Atl. St. Vigo B., 26, 36 ; Med. Adventure Bank.

*Distribution*. Norway, Sweden, Great Britain, and Holland to the Mediterranean and Adriatic, Canaries, and Madeira ; low water at spring-tides to 70 fms.

*Fossil*. Pliocene : Italy and Rhodes. Post-tertiary : Clyde Beds and Selsea.

The principal synonyms are *R. exigua* of Michaud and *R. carinata* of Philippi. Not *Turbo costatus* of Lamarek, which is *R. violacea*, nor *R. costata* of Desmarests, which is *R. variabilis* of v. Mühlfeld.

Mediterranean and Teneriffe specimens are smaller than northern specimens.

C. RISSOA. Mostly ribbed lengthwise and spirally striated ; outer lip usually strengthened by a rib.

16. RISSOA MONODONTA, Bivona.

*R. monodonta* (Biv.), Philippi, Moll. Sic. i. p. 151, t. x. f. 9.

'Porcupine' Exp. 1870 : Med. St. Algeciras B.

*Distribution.* Lisbon (*McAndrew*), Mediterranean and Adriatic; 4–18 fms.

*Fossil.* Pliocene: Central and Southern Italy. Post-tertiary: Rhodes and Cyprus.

In the shape and columellar fold this species is allied to the next.

17. *RISSOA MEMBRANACEA*, Adams.

*Turbo membranaceus*, Ad. in Tr. Linn. Soc. v. p. 2, t. i. f. 12, 13.

*R. membranacea*, B. C. iv. p. 30; v. p. 208, pl. lxxvii. f. 8.

'Porcupine' Exp. 1869: St. Donegal B. 1870: Atl. 26.

*Distribution.* Throughout the European seas from the Loffoden Isles southwards, Black Sea, the African coasts of the Mediterranean, and Canaries (*Schwartz*); 0–600 fms.

*Fossil.* Pliocene: Italy. Post-tertiary: Scandinavia, Scotland, Ireland, Selsea, Martigues, Rhodes; 0–100 ft.

The varieties and names of so-called species which I consider varieties are very numerous; I have noted more than a score of such synonyms. *R. splendida* of Eichwald appears to differ only in having a shorter spire and rows of small purplish spots, arranged in the same way as in a pretty Algerian variety of *R. montacuti*.

✓ 18. *RISSOA VARIABILIS*, Megerle v. Mühlfeld.

*Turbo variabilis*, Meg. v. Mühlf. Ges. Nat. fr. zu Berlin, 1829, i. p. 212, t. i. (7), f. 9, *a*, *b*.

'Porcupine' Exp. 1870: Med. St. Algeciras B.

*Distribution.* Atlantic coasts of Spain and Portugal, Mediterranean, Adriatic, and Black Sea; 10–120 fms.

*Fossil.* Miocene: Madeira (*Mayer*). Pliocene: Italy. Post-tertiary: Nice, Leghorn, Sicily, Rhodes.

*R. costata* of Desmarests and *R. desmaresti* of Forbes. Monterosato says (in his letter) that perhaps *Eulima cingulata* of Requier may have been an elongated ribless variety of the present species. Such attempts at identifying doubtful species of obscure authors are more ingenious than useful.

*R. variabilis* deserves its name, as regards the length of spire and strength of sculpture.

✓ 19. *RISSOA SIMILIS*, Scacchi.

*R. similis*, Sc. Cat. conch. Neap. 1836, p. 15; Phil. Moll. Sic. ii. p. 124, t. xxiii. f. 5. Var. as *R. costulata*, B. C. iv. p. 35; v. p. 208, pl. lviii. f. 1.

'Porcupine' Exp. 1870: Atl. St. Vigo B.

*Distribution.* From Scarborough and along the western coasts of France and Spain to the Mediterranean and Adriatic, Madeira and the Canaries; 0–150 fms.

*Fossil.* Miocene: Madeira. Pliocene: Italy. Post-tertiary: Selsea, Leghorn, Ischia, Rhodes, and Cyprus.

*R. costulata* of Alder and probably also *R. ovatella* of Forbes are varieties of *R. similis*; and there are several other synonyms. In my paper on Piedmontese Mollusca (nearly thirty years ago) I erroneously referred this species to *R. oblonga* of Desmarests; I now consider that so-called species a variety of *R. membranacea*. *R. costulata* of Risso appears to be the same species as *R. costata* of Desmarests, which is *R. variabilis* of v. Mühlfeld. But it would cause unnecessary confusion if these names were interchanged. Let usage prevail. "I care not for their names."

Specimens of *R. costulata*, Alder, from Cadiz, are undistinguishable from those of *R. similis* except in colour. The peculiar characters of both are the constriction of the body-whorl and mouth, and the spire tapering to a fine point. Some specimens of the typical form are ribless and nearly smooth, and others of the variety *costulata* are broader and more ventricose in the middle.

✓ 20. *RISSEO VIOLACEA*, Desmarests.

*R. violacea*, Desm. in Bull. sc. soc. phil. Paris, 1814, p. 8, pl. i. f. 7; B. C. iv. p. 33; v. p. 208, pl. lxxvii. f. 9.

'Porcupine' Exp. 1870: Atl. St. Vigo B.; Med. Algeciras B., G. Tunis.

*Distribution*. Loffoden Isles to the Mediterranean and Adriatic, Black Sea, Madeira, and Canaries; 0-108 fms.

*Fossil*. Pliocene: Italy. Post-tertiary: Norway, Scotland and Ireland, Nice, Leghorn, Ischia, Rhodes; 0-100 ft.

At least ten synonyms, including *R. lilacina*, Recluz, *R. rufilabrum*, Leach apud Forbes and Hanley, *Persephone rufilabris*, Leach, and *R. porifera*, Lovén.

Variable as to size and the strength of sculpture, like all other littoral and prolific species.

✓ 21. *RISSEO PARVA*, Da Costa.

*Turbo parvus*, Da Costa, Brit. Conch. p. 104.

*R. parva*, B. C. iv. p. 23, pl. i. f. 1; v. p. 207, pl. lxxvii. f. 3, 4.

'Porcupine' Exp. 1870: Atl. St. Vigo B., 13, 36 (intermediate between the typical form and the variety *interrupta*), Gibraltar B. (monstr.). As var. *interrupta*, 1869: Donegal B., L. Swilly. 1870: Atl. Vigo B. (*semicostata*), 16; Med. Algeciras B. (*semicostata*), 50, Adventure Bank.

*Distribution*. Typical form and var. *interrupta*. Scandinavia from Vadsö southwards, Great Britain and Ireland, Heligoland, Holland, France, Spain, Portugal, Italy, Dalmatia, Greece, Algeria, Madeira, Canary Isles, and 'Valorous' and 'Travailleur' Expeditions; 0-1785 fms. (at great depths transported from the littoral and lamianian zones).

*Fossil*. Pliocene or Post-tertiary: Scandinavia, Great Britain and Ireland, Biot, Nice, Italy, Cos, and Rhodes; 0-200 ft. Not as *Turbo interruptus* of Adams from the Tertiary formation of N.W. Germany, described and figured by Philippi.



There are already too many names for this abundant and widely distributed little shell; but I fear that some of the modern species-makers will contrive to invent a few more to the great detriment and confusion of science. Quousque tandem abutentur patientiâ nostrâ?

✓ 22. *RISSOA ANGULATA*<sup>1</sup>, Jeffreys. (Plate IX. fig. 5.)

SHELL forming a short and regular cone, thick, opaque, rather glossy: *sculpture*, 10-12 strong and slightly curved longitudinal ribs on each of the body- and penultimate whorls, those on the latter whorl being sometimes confluent or else some being much finer than the others; the ribs on the body-whorl are not continued below the periphery, which is distinctly angulated; there are no traces of spiral striæ; the upper whorls are quite smooth: *colour* yellowish brown or dirty white: *spire* short: *whorls* 4, compressed; the last occupies more than half of the spire; apex blunt: *suture* slight: *mouth* obtusely triangular: *outer lip* sharp, not crenated within: *inner lip* thickened: *pillar* imperforate. L. 0·075. B. 0·05.

'Porcupine' Exp. 1870: Med. St. Adventure Bank. Several specimens, apparently semifossilized or having the interior filled with small agglomerated fragments of a siliceous nature.

Differs from *R. ehrenbergi*, Philippi, according to his description and figure, in being more regularly conical, having 4 instead of 6 whorls and fewer ribs, and being destitute of spiral striæ.

✓ 23. *RISSOA ALBELLA*, Lovén.

*R. albella*, Lov. Ind. Moll. Scand., var. *sarsii*, p. 25: B. C. iv. p. 29; v. p. 207, pl. lxxvii. f. 6.

'Porcupine' Exp. 1870: Med. St., Adventure Bank.

*Distribution*. Norway and Sweden, Kiel Bay, Shetland, Hebrides, Bantry Bay, Southampton, Dalmatia, and Southern Italy; lamianian zone.

*Fossil*. Post-tertiary: Christiania district, Uddevalla, Apulia, and Oreto in Sicily; 0-100 ft.

*R. ænonensis* of Brusina and *R. targionii* of Appellius, appear to be also varieties of the present rather variable species. The variety *sarsii* bears the same relation to the typical form as the var. *interrupta* has to *R. parva*; the principal difference between *R. albella* and *R. sarsii* consists in the latter having more convex whorls, and consequently a deeper suture, a slighter labial rib, and in the coloured markings.

I have satisfied myself that this is not the *Paludina benzi* of Aradas, judging from authentic specimens of that species. Nor do I consider it *R. ehrenbergii* of Philippi, which he found among seaweeds brought by Ehrenberg from Cattaro; it may have been a mistake as to the locality, as well as in other cases of Red-Sea shells, owing to the misplacement of tickets.

<sup>1</sup> Angular.

24. *Rissoa nana*, Philippi.*R. pusilla*, Ph. Moll. Sic. i. p. 154, t. x. f. 13.*R. nana*, Id. op. cit. ii. p. 127.

'Porcupine' Exp. 1870: Med. St. 55, Adventure Bank.

*Distribution.* Coasts of Western France, the Mediterranean and Adriatic; 30-777 fms.*Fossil.* Miocene: Madeira. Pliocene: Monte Mario and Calabria. Post-tertiary: Rhodes.

The reason given by Philippi for changing the name which he originally proposed, viz. because Brocchi had previously given the name *pusillus* to a species of *Turbo*, was not satisfactory, inasmuch as Brocchi's shell belonged to *Rissoina* and not to *Rissoa*. This I have ascertained by an examination of Brocchi's specimens. But the change has been sanctioned and adopted by modern conchologists.

Not *R. nana* of Grateloup, which is a Miocene species of the Bordeaux Basin, nor *R. nana* (Partsch), Hörnes, from the Vienna Basin, both names being subsequent in date to that of Philippi. I greatly doubt the identification of the present species with *R. dolium* of Nyst, which name was substituted by him for *R. pusilla* of Marcel de Serres, also a fossil of the Bordeaux Basin. Possibly our species may be the *R. pulchra* of Forbes; but the size which he gives (one tenth of an inch) is far too great. Unfortunately the Ægean shells were dispersed, and many of them lost to science; his descriptions, or rather notices, were too short and insufficient for the exact comparison of his species, and very few of them were figured.

✓ 25. *Rissoa turricula*<sup>1</sup>, Jeffreys. (Plate IX. fig. 6.)

SHELL turreted, thin, semitransparent, and somewhat glossy: *sculpture*, 20-25 slight and gently curved longitudinal ribs on the last whorl, and nearly as many, but finer, on the next whorl; the remainder of the shell is smooth; there are no spiral striæ or other markings: *colour* whitish: *spire* pointed: *whorls* 4, swollen, gradually increasing in size; apex slightly twisted on one side: *suture* deeply excavated: *mouth* roundish: *outer lip* sharp; inside smooth: *inner lip* reflected on the lower part of the pillar, behind which is a small chink. L. 0.05. B. 0.035.

'Porcupine' Exp. 1870: Atl. St. 3. Two specimens, not in good condition.

I propose this species with some hesitation, because the specimens have the appearance of being decorticated, like casts of a fossil shell; but I cannot identify them with any known species.

✓ 26. *Rissoa inconspicua*, Alder.

*R. inconspicua*, Ald. in Ann. & Mag. N. H. xiii. p. 223, pl. viii. f. 6, 7: B. C. iv. p. 26; v. p. 207, pl. lxxvii. f. 5.

'Porcupine' Exp. 1869: St. Donegal, B. 1870: Atl. Vigo B., 24, 26-30, 35, Tangier B.: Med. 50, Adventure Bank.

<sup>1</sup> A little bower.

*Distribution.* Arctic Norway southwards along the western coasts of Europe to the Ægean archipelago, Madeira (*Watson*), and Teneriffe in the Canary Isles (*McAndrew*); 0-120 fms.

*Fossil.* Pliocene: Norwich Crag, Italy. Post-tertiary: Norway and Sweden, Scotland and Ireland, Rhodes; 0-100 ft.

This may be the *Turbo albus* of Adams (Trans. Linn. Soc.) and *Turbo albulus* of Maton and Rackett, and if so, the first of those names would take precedence of any other; but they may be considered antiquated. *R. rudis*, *R. nana*, *R. radiata*, and *R. granulum* of Philippi were erroneously given by me in my paper on the Piedmontese Testacea as varieties of the present species; that, however, was nearly thirty years ago, and I have since seen all these species instead of the descriptions of them. Mörch united, but wrongly as I believe, *R. albella* and *R. sarsii* with *R. inconspicua* as varieties. The sculpture is excessively variable, as regards not only the number and comparative strength of the longitudinal and spiral striæ, but even their existence. Some specimens are marked with one or two varices or larger ribs. The variety *variegata* is peculiar, and has been made a distinct species by Schwartz v. Mohrenstern.

✓ 27. *RISSOA DELICIOSA*<sup>1</sup>, Jeffreys. (Plate IX. fig. 7.)

*SHELL* conic-oval, rather thick, semitransparent, and glossy: *sculpture*, short, sharp, and somewhat curved longitudinal ribs or striæ, of which there are from 16 to 20 on each of the three last whorls, the first and second whorls being smooth; these ribs or striæ do not extend below the periphery; they are crossed by more numerous spiral striæ or thread-like lines, the six lowermost being much stronger than the rest; this intercrossing, however, does not impart to the surface a reticulated appearance, because the longitudinal ribs are much thicker and less numerous than the spiral striæ: *colour* milk-white: *spire* short, bluntly pointed: whorls 5, convex, gradually enlarging; apex bulbous: *suture* deep: *mouth* more round than oval, angular above: *outer lip* simple and rather thin, but strengthened outside by a thickened rib: *inner lip* folded over the pillar and forming with the outer rib a continuous or complete peristome: *base* compressed or slightly concave, and having a narrow chink behind the pillar-lip. L. 0·075. B. 0·05.

*Var. multicostrata:* Longitudinal ribs much more numerous, finer and straight; spiral striæ also more numerous, but slighter and less distinct except at the base. Some specimens have much more delicate and close-set sculpture than is shown in the figures; and in other specimens the sculpture almost disappears. The variety, if it can be properly considered distinct, is connected with the typical form by intermediate gradations. Species-makers would revel in this kind of manufacture.

'Porcupine' Exp. 1870: Atl. St. 9, 13, 16, 17, 17*a*, 24, off C. Sagres, 26-34, 36; Med. 50, Adventure Bank, 58.

<sup>1</sup> Delightful.

*Distribution.* Bay of Biscay ('Travailleur' Exp.), Mediterranean (same, 'Shearwater' and Italian Exps., Marion, and Nares); 120-1062 fms. What I regard as a variety was procured in the 'Challenger' Exp., off Palma in the Canaries, at a depth of 1125 fms.; it is rather larger, and the sculpture is stronger. I gladly take again this further opportunity of publicly acknowledging my obligation to the Rev. Robert Boog Watson, who has so patiently and carefully worked out the greater portion of the 'Challenger' Mollusca, for his courtesy in allowing me to compare them with the Mollusca which are the subject of the present and preceding papers.

*Fossil.* Pliocene: Messina (*Seguenza*).

✓ 28. *RISSOA MONTACUTI* (*montagui*), Payraudeau.

*R. montagui*, Payr. Moll. Cors. p. 111, t. v. f. 13, 14.

'Porcupine' Exp. 1870: Med. St. Algeciras B.

*Distribution.* Rochelle (*Dr. d'Orbigny*), Cadiz (*J. G. J.*), Gibraltar to the eastern coasts of the Mediterranean, Adriatic, Madeira (*Watson*); 0-40 fms.

*Fossil.* Miocene: Vienna and Bordeaux Basins, and Maine-et-Loire. Pliocene: Italy. Post-tertiary: Leghorn, Ischia, Rhodes.

Apparently *Alvania lineata* and other species of Risso; but his descriptions and figures are equally enigmatical and indeterminable. There are also nine or ten more synonyms for this species and its varieties including *R. aspera* of Philippi and *R. algeriana* of Monterosato.

I have ventured to slightly change the spelling of the specific name, for the reason which I gave in B. C. (iv. p. 229) as to *Natica montacuti*. It surely is desirable to adhere to the established rule that all names of species should be given in Latin, preferably to a merely Latinized form. I therefore, in Part V. of the present series of papers (p. 673), substituted *eccentros* for *excentrica*. The former is a classical word, and is found in all good lexicons and dictionaries; the other is neither classical nor found anywhere. I make this remark with all respect for the opinions of M. Crosse and Herr Weinkauff, who have criticized my alteration.

✓ 29. *RISSOA WYVILLE-THOMSONI*, Jeffreys.

"*R. weyville-thomsoni*" (Jeffer.), Friele in *Nyt Mag. f. Naturvid.* 1877 (separate copy), p. 3. It will be figured in the forthcoming publications of the Mollusca from the 'Vöringen' Expedition A, as well as in the Quarterly Journal of the Geological Society.

'Lightning' Exp. St. 1.

'Porcupine' Exp. 1869: St. 77 (560 fms.).

*Distribution.* 'Vöringen' Exp.; cold area; 488-510 fms.

*Fossil.* Post-tertiary: Bridlington (*Lamplugh*)!

This and the next species are umbilicated; and if this character were sufficient to warrant another section of the genus, the name *Punctulum* might be appropriate. Another species, also a Bridlington fossil, which I have named *R. subperforata*, has the same peculiarity.



Dr. Kobelt and M. Crosse have objected to the specific name *wyville-thomsoni* as contravening the laws of Linnean nomenclature. But the name is really one and single, although compound and apparently double. The patronymic name Thomson and many others in England are so very common that the bearers of it are obliged to annex the second baptismal name by way of distinction. My own name by the bye is also a case in point. Linné himself frequently used compound names for Testacea, viz.: *pes-pelecani*, *pes-lutræ*, *caput-serpentis*, *crista-galli*, *stercus-muscarum*, *Auris-Midæ*, *Auris-Judæ*, *Auris-Dianæ*, *Tectum-persicum*, *oculus-capri*, *cornu-militare*, and *Cornu-arietis*. Here are a dozen such instances of Linnean names.

✓ 30. *RISSOA STEFANISI*<sup>1</sup>, Jeffreys.

*R. costulata*, S. Wood, Crag Moll. i. p. 106, t. xi. f. 12, a, b.

*R. stefanisi*, B. C. v. p. 208.

*Distribution.* Throughout the Mediterranean, in few localities and sparingly; 40–600 fms.

*Fossil.* Pliocene: Red and Coralline Crag, Belgian Crag, and Biot. I cannot agree with Monterosato that this is the same species as *Actæon pygmæa* of Grateloup, a Miocene fossil of the Bordeaux Basin, nor with Van den Broeck that it belongs to the *Pyramidellidæ*. The apex is not heterostrophe or sinistral, although intorted; the peristome is continuous; and the pillar has no tooth or fold, only a slight thickening.

When I suggested the name *stefanisi* instead of *costulata*, I was under the impression that Alder's name *costulata*, being older than that of Wood, must be preferred to the latter. But I now believe that Alder's species is merely a variety of *R. similis*, and that Risso's *R. costulata* may be identical with *R. variabilis* of v. Mühlfeld. In that case Wood's name might stand. However,

“Confusion's cure lives not  
In this confusion.”—SHAKESPEARE.

D. *CINGULA*. Spirally striated or smooth; outer lip plain-edged.

✓ 31. *RISSOA STRIATA*, Adams.

*Turbo striatus*, Ad. in Tr. Linn. Soc. iii. p. 66, t. xiii. f. 25, 26.

*R. striata*, B. C. iv. p. 37; v. p. 208, pl. lviii. f. 2.

'Lightning' Exp. St. 2, 4, 5.

'Porcupine' Exp. 1869: St. 19. 1870: Atl. Vigo B.

*Distribution.* From the arctic and northern seas in both hemispheres to the Ægean and Teneriffe on one side, and Little Gull Island in New York and Jamaica on the other side; 0–96 fms.

The American and arctic form is *Cingula aculeus*, Gould (1841) = *R. saxatilis*, Möller (1842) = *R. arctica*, Lovén (1846). This

<sup>1</sup> Named in honour of the late General de Stefanis of Naples, who was an assiduous conchologist, and made an extensive collection of shells from that part of the Mediterranean. He rendered me much kind assistance.

variety, as well as a specimen from Corsica, are more or less smooth, and sometimes destitute of the spiral striæ.

*Fossil.* Pliocene: Red and Coralline Crag, and Monte Mario. Post-tertiary: Norway and Sweden, Scotch and Irish "glacial" beds, Mammalian Crag, Selsea and Leghorn; 0-460 ft.

Among the synonyms are *R. minutissima* of Michaud and *R. multilineata* of Stimpson. Not *R. striata* of Quoy and Gaimard.

It is a favourite food of the Eider Duck and other sea-fowl.

### 32. *RISSOA AFFINIS*<sup>1</sup>, Jeffreys. (Plate IX. fig. 8.)

*SHELL* oblong, slender, rather thin, semitransparent, and glossy: *sculpture* slight and indistinct, not sharp and thread-like, spiral striæ, of which there are about 15 on the last whorl, less than half that number on the penultimate whorl, and mere traces on the next; the topmost whorl is smooth: *colour* whitish: *spire* rather elongated: *whorls* 4, moderately convex, the last exceeding two thirds of the whole; apex bulbous and somewhat truncated: *suture* slight: *mouth* triangular, sharply pointed above: *outer lip* thin, somewhat expanded: *inner lip* reflected on the pillar, and thickened: *peristome* continuous. L. 0.0125. B. 0.005.

'Porcupine' Exp. 1870: Atl. St. Vigo B., 16. A single specimen from each station.

Differs from *R. striata* in being broader proportionately to the length, having 4 instead of 5 or 6 whorls, fewer and less distinct spiral striæ, and no trace of longitudinal striæ, with an expanded mouth and an acute-angled corner at the top. *R. arenaria* has a shorter spire, stronger and sharper sculpture, swollen whorls, a deep suture, and roundish mouth. The present species is not *R. affinis* of Benoit, which is (ex visu typi) *Hydrobia ventrosa*.

### 33. *RISSOA ARENARIA*, Mighels and Adams.

*Cingula arenaria*, Migh. & Ad. in Boston Journ. Nat. Hist. iv. (1842), p. 49, pl. iv. f. 24.

'Lightning' Exp. St. 2.

*Distribution.* Spitzbergen, Vadsö (*Verkrüzen*); Bohuslän (*Lovén*), Greenland, Canada, Casco B., and Grand Manan; 5-40 fms.

*Fossil.* Post-tertiary: Greenock and Canada.

*R. mighelsi* of Stimpson, who changed the name, because he said this species was not the *Turbo arenarius* of Montagu. But Montagu never described or mentioned any species of that name. *Helix arenaria* of Maton and Rackett (*Turbo arenarius* of Turton) is *Odostomia decussata*. *R. exarata* of Stimpson is a variety of the present species, judging from his description and figure, as well as from a typical specimen given me by the lamented Professor; this variety was also found by Professor G. O. Sars in Finmark.

The animal was described by me in the 'Annals and Magazine of Natural History' for March 1877.

<sup>1</sup> Allied, sc. to *R. striata*.

✓ 34. *RISSOA TENUISCULPTA* (Jeffreys), Watson.

*R. tenuisculpta*, Wats. in Proc. Zool. Soc. 1873, p. 369, pl. xxxvi. f. 28.

'Porcupine' Exp. 1870: Atl. St. 9, 16, 17a, 26, 36; Med. 53, Adventure Bank. One of the specimens has the middle whorl keeled or angular.

*Distribution.* Bay of Biscay (*de Folin* and 'Travailleur' Exp.), Mediterranean (Italian Exp.), Madeira (*McAndrew* and *Watson*), off Culebra I. and Ascension ('Challenger' Exp.); 25-640 fms.

The sculpture is more or less strong, and the size of the last whorl and of the mouth is variable. In my deep-sea specimens the longitudinal striæ are distinct, numerous, and curved (flexuous on the last whorl), but they do not extend below the periphery. Mr. Watson says, "Longitudinal lines of growth few, faint, hair-like." From a careful comparison of many specimens with those of *Rissoa? coriacea*, Manzoni (Journal de Conchyliologie, 1868, pp. 166 and 242, pl. x. f. 6), I should be inclined to unite the two Madeiran species. In such case the latter specific name would have precedence.

✓ 35. *RISSOA PROXIMA*, Alder.

*R. proxima* (Alder), Forbes & Hanley, iii. p. 127, pl. lxxv. f. 7, 8; B. C. iv. p. 39; v. p. 208, pl. lxxviii. f. 3.

'Porcupine' Exp. 1869: St. 2, 18. 1870: Atl. 10.

*Distribution.* Loffoden Isles to the Mediterranean; 15-108 fms.

*Fossil.* Pliocene: Coralline Crag, Siena and Palermo.

This species was first and fully described by me in the 'Annals and Magazine of Natural History' for 1848 (p. 16), under the name of *R. striatula*, and that specific name has the priority of many years over the late Mr. Alder's name of *proxima*. But in order to prevent my name being confounded with that of *Turbo striatulus*, Linné (which, however, is a species of *Odostomia*), I afterwards relinquished my name and adopted that of Alder, by which the species is now generally known to conchologists. Perhaps I was not in strictness justified in doing so.

✓ 36. *RISSOA VITREA*, Montagu.

*Turbo vitreus*, Mont. Test. Brit. p. 321, t. 12. f. 3.

*R. vitrea*, B. C. iv. p. 40; v. p. 208, pl. lviii. f. 4.

'Porcupine' Exp. 1869: St. 2, 18. 1870: Atl. 10, Vigo B., 29, 30; Med. 50, Benzert Road.

*Distribution.* Bohuslän (*Malm*) to the Mediterranean; 12-249 fms.

*Fossil.* Miocene: Transylvania (*Hauer* and *Stache*)? Pliocene: Coralline Crag and Italy. Post-tertiary: Sweden, Belfast, and Leghorn.

Not *R. vitrea* of Nyst or of M. Sars.

See B. C. iv. p. 40, as to the characters which distinguish this species from *R. proxima*.

✓ 37. *RISSOA SUBSTRIATA*, Philippi.

*R. substriata*, Phil. Moll. Sic. ii. p. 132, t. xxiii. f. 20.

'Porcupine' Exp. 1870 : Atl. St. 27, 28, 30, 36, Tangier B. ; Med. 50.

*Distribution.* G. Lyons (*Martin*, f. *Monterosato*), and Marseilles (*Marion*).

*Fossil.* Pliocene : Tuscany (*de Stefani*), Calabria (*Tiberi*), and Sicily (*Philippi* and *Monterosato*).

Some specimens have the outer lip thickened by a slight rib. Philippi says, "labrum simplex." The spiral striæ are occasionally stronger than the longitudinal striæ ; and in such cases there is no regular reticulation, as described by him.

✓ 38. *RISSOA SOLUTA*, Philippi.

*R. soluta*, Phil. Moll. Sic. ii. p. 130, t. xxiii. f. 18 : B. C. iv. p. 45 ; v. p. 208, pl. lxxviii. f. 7.

'Lightning' Exp. St. 4.

'Porcupine' Exp. 1870 : Atl. St. Vigo B., 26, Tangier B. ; Med. Adventure Bank.

*Distribution.* Finmark to the Archipelago and Adriatic ; 20-300 fms.

*Fossil.* Pliocene : Central and Southern Italy. Post-tertiary : Norway, Rhodes ; 0-100 ft.

Cantraine described the mouth of his *R. obtusa* as "obliqua," and the peristome as "continuo" ; and neither he nor Philippi noticed the spiral striæ or the umbilical chink. His description, therefore, is not quite applicable to the present species ; and I still think the name given by Philippi should be retained, especially as the latter illustrated his description by a figure.

✓ 39. *RISSOA TURGIDA*, Jeffreys.

*R. turgida*, Jeffr. in Ann. & Mag. Nat. Hist. 1870, p. 8 : G. O. Sars, Moll. arct. Norv. p. 183, t. 10. f. 12, a-b.

'Porcupine' Exp. 1870 : Atl. St. 3, 6, 27, 28, 34.

*Distribution.* North Cape to Christianiafiord, Bay of Biscay ('Travailleur' Exp. 1882), New England (*Verrill*) ; 100-487 fms.

*Fossil.* Pliocene : Sicily (*Monterosato* and *Seguenza*).

The slight ridge or line which encircles the periphery is less distinct in some than in other specimens.

{ 40. *RISSOA SEMISTRIATA*, Montagu.

*Turbo semistriatus*, Mont. Test. Br. Suppl. p. 136.

*R. semistriata*, B. C. iv. p. 46 ; v. p. 208, pl. lxxviii. f. 8.

'Lightning' Exp. St. 4.

'Porcupine' Exp. 1870 : Atl. Vigo B., 36.

*Distribution.* Norway, Faroe Isles, Denmark, Great Britain and Ireland, northern and western coasts of France and Spain, Mediter-



ranean, Adriatic, and var. Madeira (*Watson*); 0-80 fms. Bay of Biscay ('Travailleur' Exp. 1881); 640 fms., most probably drifted.

*Fossil.* Pliocene: Monte Mario. Post-tertiary: Portrush and Leghorn.

I would refer to 'British Conchology' for the synonyms of this rather variable species. And I am inclined to add to the list my *R. picta*, as well as *R. granulum* of Philippi, *R. galvagni* of Aradas, *R. depicta* of Manzoni, *R. maculata* and *R. concinna* of Monterosato, *R. tenuiplicata* of Seguenza, and *R. æmula* of Granata.

I regret to differ so much from some continental conchologists with respect to the comparative value of certain characters which have induced them to make so many species out of what I believe to be mere varieties; but I do not attach so great an importance as they evidently do to the difference of specimens, which are abundant, widely distributed, and consequently variable. However, they may have as much right to regard these as distinct species as I have to consider them varieties; and it is not very important whether such forms are called by one name or the other.

Some specimens have a reticulated sculpture in consequence of the spiral striæ covering all the surface of the shell, and being crossed by close-set longitudinal striæ. The texture of these specimens is thicker and stronger than usual.

#### ✓ 41. *RISSOA CINGILLUS*, Montagu.

*Turbo cingillus*, Mont. Test. Br. p. 328, t. 12. f. 7.

*R. cingillus*, B. C. iv. p. 48; v. p. 208, pl. lxxviii. f. 9.

'Porcupine' Exp. 1869: St. Donegal B.

*Distribution.* Iceland (as *Helix pella* of Linné)? Norway, Sweden, Denmark, Faroe and British Isles, northern and western coasts of France and Spain, Mediterranean; 0-20 fms.

*Fossil.* Post-tertiary: Scotland, Ireland, and Tuscany.

Several old synonyms; but if the existence of this species in Iceland were established, instead of doubtfully depending on the authority of Zoega, one of Linné's pupils, the specific name ought to be *pella*, although by no means appropriate.

#### 42. *RISSOA ASTURIANA*, Fischer.

*Plagiostila asturiana*, Fisch. in 'Les Fonds de la Mer,' i. p. 50, pl. 11. f. 5.

'Porcupine' Exp. 1870: Med. St. Gibraltar Bay.

*Distribution.* Gijon and Vigo Bay (*de Polin*); 10-18 fms.

I cannot separate this species, however peculiar and interesting, from *Rissoa* by any definite character. In comparison with *R. lactea* the shape is similar; the papillary apex, the disproportionately large size of the last whorl, the obliquity of the axis or pillar, the semilunar form of the aperture or mouth, and the thickened peristome are the same in each of those species. The chief difference consists in the present species being devoid of sculpture. Perhaps both species might constitute another section of *Rissoa*.

✓ 1. *HYDROBIA ULVÆ*, Pennant.

*Turbo ulvæ*, Penn. Br. Zool. iv. p. 132, pl. lxxxvi. p. 120.

*Hydrobia ulvæ*, B. C. iv. p. 52; v. p. 208, pl. lxix. f. 1.

'Porcupine' Exp. 1869: St. Donegal B. (type and vars. *barleei* and *octona*), 19 (var. *barleei*), 58 (same variety). 1870: Med. 50 (var. *subumbilicata*).

*Distribution*. Everywhere between tidemarks and in brackish water throughout the eastern portion of the North Atlantic, from Finmark and Novaia Zembla, southwards to the Mediterranean and Adriatic; California (*P. Carpenter*)? A chance specimen of the variety *barleei* was dredged in the Bay of Biscay during the 'Travailleur' Expedition of 1880 at the depth of 1062 fathoms!

*Fossil*. Pliocene and Post-tertiary: Scandinavia, Great Britain and Ireland (including the Coralline, Red, and Mammalian Crags), Leghorn, Southern Italy, and Rhodes.

This abundant and widely distributed little shell has long served as a manufactory of nearly countless species; and even undistinguishable and useless genera, such as *Peringia* and *Peringiella*, have been invented to show the ingenuity of ambitious conchologists. *Assimineæ gallica* of the late Dr. Paladilhé is another synonym, as I have ascertained from the inspection of typical specimens which that author kindly sent me. *Turbo minutus* of Totten, which inhabits similar situations on the western coasts of North America, and which I found plentifully on the seaboard of Canada and New England, appears to be a different species. See also 'British Conchology' for synonyms and varieties.

✓ 2. *HYDROBIA COMPACTA*<sup>1</sup>, Jeffreys. (Plate IX. fig. 9.)

SHELL conical, thick, semitransparent, and glossy: *sculpture* none, except in the periphery being obtusely angular: *colour* yellowish: *spire* rather short, bluntly pointed: *whorls* 6, flattened, gradually increasing in size; the last occupies about two thirds of the spire when viewed in a supine position: *suture* slight but distinct: *mouth* oval, contracted above and angular below: *outer lip* somewhat thickened: *inner lip* also thickened, and reflected on the pillar: *peristome* continuous: *base* imperforate. L. 0·175. B. 0·1.

'Porcupine' Exp. 1870: Atl. St. Tangier B. Several dead specimens.

Differs from *H. ulvæ* in its shape, which is that of a short cone, in the periphery being angular or keeled at all stages of growth, and in the base being imperforate. I cannot identify the present species with any of those which were described and figured by Paladilhé in his 'Nouvelles Miscellanées Malacologiques.' Much confusion seems to have been caused by him and other continental writers, not only in making so many worthless genera of this family (*Littorinidæ*), but in referring species of *Hydrobia* to *Assimineæ*, which belongs to the Pulmonobranchiata. For instance, in describing his *Assimineæ obeliscus* (which is apparently one of the numerous

<sup>1</sup> Compact.

varieties of *H. ventrosa*) he criticizes Küster for placing among the *Hydrobiæ* Pennant's *Turbo ulvæ*, contending that it is "une véritable *Assimineæ*." I have already shown in 'British Conchology,' vol. v. p. 208, and in the foregoing notice of *H. ulvæ*, that *A. gallica* of Paladilhé is the typical form of the above species.

#### Family X. PALUDINIDÆ.

✓ BITHYNIA RUBENS, Menke.

*Paludina rubens*, Menke in Chemn.-Küst. pl. 9. f. 27-29.

'Porcupine' Exp. 1870: Med. St. 51. Two small specimens, which had been probably carried out to sea from a freshwater river or stream and deposited in 1415 fathoms.

*Distribution.* Sicily, Algiers (coll. Weinkauff.).

#### Family XI. HETEROPHROSYNIDÆ.

✓ BARLEEIA RUBRA, Montagu.

*Turbo ruber*, Mont. Test. Br. p. 320.

*B. rubra*, B. C. iv. p. 56, pl. I. f. 2; v. p. 209, pl. lxix. f. 4.

'Porcupine' Exp. 1870: Atl. St. Gibraltar B.; Med. 50, Ben-zert Road.

*Distribution.* Hellen in Bergensfiord (*Friele*), northern and western coasts of Ireland, southern counties of England, N. and W. coasts of France and Spain, Mediterranean and Adriatic, Canaries and Madeira (*McAndrew*), C. Verd I. (*Rochebrune*), off Pernambuco ('Challenger' Exp.)!; littoral and laminarian zones to 120 fms., the greater depths being probably accidental. I distrust the recorded localities in Scotland, the North of England, and South Wales.

*Fossil.* Pliocene: Central and Southern Italy. Post-tertiary: Leghorn.

The only noticeable synonym is *Rissoa fulva* of Michaud.

#### Family XII. SKENEIDÆ.

✓ HOMALOGYRA DENSICOSTATA<sup>1</sup>, Jeffreys. (Plate X. fig. 1.)

SHELL somewhat resembling in shape *Planorbis trivolvæ* of Say, rather thin, semitransparent, and glossy: *sculpture*, extremely numerous and close-set striæ in the earlier and middle stages of growth, which ultimately disappear and become microscopic lines; the upper part of the periphery as well as the base of the shell are encircled by a sharp keel which intersects the spiral striæ: *colour* whitish: *spire* deeply sunk on both sides: *whorls* 4, compactly coiled; the last is swollen and disproportionately large; the others rapidly decrease in size: *suture* narrow but excavated: *mouth* horseshoe-shaped, with a thin edge, and expanding outwards: *umbilicus* very wide and open, completely exposing the spire on each side. L. 0.05. B. 0.075.

<sup>1</sup> Closely ribbed.

'Porcupine' Exp. 1870: Atl. St. 16, 17a. Two specimens, one of which appears to be full-grown and the other half-sized: both are now figured.

*Distribution.* 'Bulldog' Exp., Long. 54° 33' W., Lat. 55° 36' N. (*Wallich*); 1622 fms. A smaller specimen. I had at first mistaken it for *H. rota*. See 'British Conchology,' vol. iv. p. 72.

#### Family XIII. VERMETIDÆ.

✓ *SILICUARIA ANGUINA*, Linné.

*Serpula anguina*, L. S. N. p. 1267.

*Siliquaria anguina*, Philippi, Moll. Sic. i. p. 173, t. ix. f. 24, a-e.

'Porcupine' Exp. 1870: Med. St. off Jijeli, Rasel Amoush.

*Distribution.* Throughout the Mediterranean and Adriatic, Cape Verd I. ('Talisman' Exp. 1882); 30-122 fms.

*Fossil.* Miocene: Vienna Basin, Switzerland, Maine-et-Loire, Touraine, and Madeira. Pliocene: South of France, and Italy. Post-tertiary: Pozzuoli, Sicily, Morea, and Rhodes.

It would be interesting to know the nucleus of this curious shell. I have never seen a quite perfect specimen, although the species is not uncommon. In the young the spire is irregularly twisted upwards and is occasionally heterostrophe, with a circular mouth; at this stage of growth there is no indication of the peculiar slit.

#### Family XIV. TURRITELLIDÆ.

Genus *STILBE*<sup>1</sup>, Jeffreys.

SHELL forming an elongated cone, smooth, and of a glittering lustre; nucleus or apex of the spire regularly and bluntly pointed: *mouth* somewhat angular at the base.

Neither the soft parts of the animal nor the operculum being yet known, I cannot satisfactorily assign this remarkable shell to any family; but all the characters above given agree with those of *Turritellidæ*.

✓ *STILBE ACUTA*<sup>2</sup>, Jeffreys. (Plate X. fig. 2.)

SHELL stiletto-shaped, thin, semitransparent, and very glossy: *sculpture* none, except slight and microscopic lines of growth: *colour* milk-white: *spire* tapering: *whorls* 10, convex, very gradually increasing in size; apex somewhat compressed: *suture* distinct and deepish: *mouth* oval, pointed above and below, a little dilated at the base: *outer lip* sharp: *inner lip* interrupted above, reflected on the pillar, behind which is a narrow slit or umbilical chink. L. 0.25. B. 0.1.

'Porcupine' Exp. 1870: Atl. St. 16. One perfect specimen and the lower half of another.

*Distribution.* 'Bulldog' Exp., Long. 54° 33' W., Lat. 55° 36' N. (*Wallich*); 1622 fms. A smaller specimen.

<sup>1</sup> Σριλβη, splendour.

<sup>2</sup> Pointed.



✓ 1. *TURRITELLA TEREBRA*, Linné.

*Turbo terebra*, L. S. N. p. 1239.

*Turritella terebra*, B. C. iv. p. 80, pl. ii. f. 1; v. p. 209, pl. lxx. f. 6.

'Porcupine' Exp. 1869: St. 1, 6, 9, 13, 14, 15, 18, 23a, 25, 63. The Minch, Little Minch, Loch Torridon, off Lerwick. 1870: Atl. 12, Vigo B., 13, 16, Setubal B., 22, 25, 26, off C. Sagres, 30-34, Tangier B.; Med. 45, Capo de Gata, Cartagena B. (and var. *gracilis*), 50, 55, Benzert Road, Basel Amoush, G. Tunis, Adventure Bank, off Rinaldo's Chair, 58.

*Distribution.* Abundant throughout the coasts of the European seas from Loffoden and the Faroe Isles southwards to the Mediterranean and Adriatic, as well as of Marocco, Algeria, and Tunis; 3-100 fms.

*Fossil.* Pliocene: Biot, and Italy. Post-tertiary: Sweden, Great Britain and Ireland, S.W. France, Leghorn, Morea, Rhodes, and Cos; 0-1350 ft. Not *T. terebra* of Philippi from the Cassel tertiaries, which is *T. geinitzi* of Speyer. The fry of the present species was referred by Costa to the extinct genus *Murchisonia*.

Synonyms. *Turbo tricarinatus* of Brocchi (not *Turritella tricarinata* of King), *Turritella communis* and other so-called species of Risso, and perhaps also *Turbo unguinus* of Linné.

Extremely variable as to the number and proportionate size of the spiral ridges or striæ. The apex is bulbous and somewhat intorted.

2. *TURRITELLA INCRASSATA*, James Sowerby.

*T. incrassata*, Sow. Min. Conch. Gt. Brit. (1812), vol. i. p. 111, t. 51. f. 6.

*T. triplicata*, Reeve, Icon. Conch. (*Turritella*), pl. ix. f. 43, a, b.

'Porcupine' Exp. 1870: Atl. St. 3a, Vigo B., 16, Tangier B., Gibraltar B.; Med. 50a, Benzert Road, Basel Amoush, Adventure Bank (and var. *bicincta*), 58.

*Distribution.* Western coasts of France and Spain, Mediterranean, Adriatic, and Canaries; 6-150 fms. Heligoland (*Leuckart*)?

*Fossil.* Miocene: Maine-et-Loire (*Bardin*). Pliocene: English and Belgian Crags (and var. *bicincta*), S.W. and S. France, Italy. Post-tertiary: "Glacial beds of Wexford, not rare" (*Forbes*)?, Cornwall (S. V. Wood; specimens nearly as large as those of the recent variety *turbona* of Monterosato), Leghorn, Rhodes, and Cyprus.

There are a few synonyms, besides *Turbo triplicatus* and other species of Brocchi.

One recent specimen, which had been repaired in the middle of the spire, had only a single ridge or keel on the last two whorls.

*MESALIA SUTURALIS*, Forbes.

*Turritella suturalis*, Forb. Rep. Æg. Inv. (1843), p. 189.

*Mesalia brevisalis*, Reeve, Icon. Conch. (*Mesalia*), pl. i. f. 2a, not f. 2b. [1869]

'Porcupine' Exp. 1870: Atl. St. C. Sagres, Tangier B.; Med. Algeciras B.

*Distribution.* Portugal (*McAndrew*, as *M. sulcata*), Gibraltar (*McAndrew* and *Ponsonby*)!, Algeciras (*Paz*, f. *Hidalgo*, as *M. brevisialis*), Aci-Trezza, Sicily (*Aradas*, as last), Ægean (*Forbes*, as *Turritella suturalis*), Algiers (coll. *Weinkauff*)!, Mogador (*McAndrew*, as *M. sulcata*, var.)!

The name *suturalis* is not classical, but it may have been used to signify the suture, which is conspicuous in this species. *Reeves's* figure is not satisfactory, because it does not show the peculiar shape of the mouth. The characters by which *Mesalia* (Gray, 1842) may be distinguished from *Turritella* seem to consist in the operculum of the former being paucispiral instead of multispiral, the apex of the spire being blunt and regular or mammiform, the outer lip flexuous, and the mouth at its base expanded or effuse. *Turritella brevisialis* of Lamarck is a larger shell, and is described as smooth with a single furrow near the suture. The type of Gray's genus is *Turritella sulcata* of Lamarck, a Grignon or Eocene fossil, which therefore cannot be the present species, although it was mistaken for it by *McAndrew*.

#### Family XV. SCALARIIDÆ.

##### 1. SCALARIA SUBDECUSSATA, Cantraine.

*S. subdecussata*, Cantr. Diagn. Moll. in Bull. Acad. Brux. ii. p. 338; Mal. Med. pl. vi. f. 24.

'Porcupine' Exp. 1870: Atl. St. off C. Sagres, 28-28 a, 30; Med. 55, Benzert Road.

*Distribution.* Atlantic coasts of France and Spain, Mediterranean, Madeira, and Canaries, 20-57 fms.

*Fossil.* Pliocene: Altavilla (*Tiberi*).

*Mesalia striata* of A. Adams according to *McAndrew*, but this species is described as from the Philippine Islands. It is, however, *M. plicata* of Adams from the Canary Isles, and *Turritella philippi* of *Aradas* and *Benoit*.

Some specimens are throughout ribbed lengthwise, while others have slight and indistinct ribs on the upper whorls only. The shell is equally variable with respect to the number, and in part occasional absence of the spiral striæ. The sculpture in one of the 'Porcupine' specimens closely resembles that of *Turbo corrugatus*, *Brocchi*, and the base is likewise keeled; but the whorls in the present species are compressed or flattened, and in *Scalaria corrugata* they are convex and the suture is deep.

*Monterosato* has given some interesting particulars of the animal in the 'Journal de Conchyliologie' for 1878, p. 152, showing differences from *Turritella* and *Scalaria*.

##### 2. SCALARIA LONGISSIMA, Seguenza. (Plate X. fig. 3.)

*S. longissima*, Seg. Form. Terz. Reggio, 1879, p. 266.

'Porcupine' Exp. 1869: St. 45. 1870: Atl. 16.

*Distribution.* Azores ('Talisman' Exp. 1883); 681 fms.

*Fossil.* Pliocene: Messina, and Reggio in Calabria (*Seguenza*).

The 'Porcupine' specimens are imperfect, but those from the

'Talisman' Expedition resemble *S. torulosa* of Brocchi; and the present species may be a slightly altered descendant of the latter species. *S. lanceolata*, which is also a Subapennine fossil, seems to deserve more especially the name or epithet *longissima*.

### 3. SCALARIA GENICULATA, Brocchi.

*Turbo geniculatus*, Br. Conch. Foss. Subap. ii. p. 659, t. xvi. f. 1.

'Porcupine' Exp. 1870: Atl. St. 3a, 6; Med. 50, 50a.

*Distribution.* Cap Breton (*de Folin*), Bay of Biscay ('Travailleur' Exp. 1882), Palermo (*Monterosato*); 97½–340 fms.

*Fossil.* Pliocene: Central and Southern Italy.

I am indebted to the kind generosity of my friend the Marquis de Folin for an exquisite and quite perfect specimen of this lovely shell. It is nearly an inch long and contains the operculum. It has 17 whorls, the 4 topmost of which are smooth and polished and form a short pointed cone. The colour is reddish-brown, with a white and thick outer lip; there is no peristome, in consequence of the inner lip being incomplete and scarcely discernible. Some of the ribs in recent or living as well as in fossil specimens are occasionally varicose or unusually thickened.

The Marquis de Folin most obligingly proposed to give my name to the species, not being aware that it had been already described.

### 4. SCALARIA VITTATA<sup>1</sup>, Jeffreys. (Plate X. fig. 4.)

SHELL slender, rather thin, semitransparent, not glossy: *sculpture*, about 15 sharp and curved, but not much raised longitudinal ribs, each being crowned or surmounted just below the suture with a short spine; the interstices of the ribs are closely striated spirally, and decussated by more than twice as many microscopic longitudinal striæ; the first 3 or 4 whorls are smooth and polished: *colour* pale yellowish-brown, with three spiral bands of a much deeper hue on the last whorl and two on each of the succeeding whorls except those at the top; the bands on the last whorl are equidistant, one below the suture, the middle one round the periphery, and the third (which is the broadest) encircling the base: *spire* gradually tapering; apex finely pointed: *whorls* 12–14, moderately convex: *suture* deep: *mouth* roundish-oval, angular at the inner base: *outer lip* strengthened by the last rib, and slightly expanded: *inner lip* reflected on the pillar, and continuous with the outer lip. L. 0·5. B. 0·15.

'Porcupine' Exp. 1870: Med. St. 50, Benzert Road.

*Distribution.* Off west coast of Africa ('Talisman' Exp.); 1254 fms.

### 5. SCALARIA CANTRAINEI, Weinkauff.

*S. cantrainei*, Weink. in Journ. de Conchyl. 1866, xiv. pp. 241, 246. Cantr. Mal. Med. pl. vi. f. 16 (sine nomine).

'Porcupine' Exp. 1870: Med. 50, 50a, Rasel Amoush, Adventure Bank.

<sup>1</sup> Banded.

*Distribution.* Bay of Biscay ('Travailleur' Exp. 1880 and 1881), southern districts of the Mediterranean and coasts of northern Africa, and the Adriatic; 70-552 fms.

*S. kuzmici* of Brusina. Tiberi considered the present species *S. muricata* of Risso; but I cannot agree with him in this determination. Risso's figure 45 looks more like *S. frondosa*, and his description of *S. muricata* may be applicable to almost any species.

This is a more slender shell and has fewer ribs than *S. trevelyana* of the same size. The young of *S. turtonæ* is also more conical, and the ribs are compressed and continuous, instead of being sharp and muricated or prickly at the top of each whorl. Some of the ribs are occasionally varicose or dilated as in other species of *Scalaria*.

6. SCALARIA ALGERIANA, Weinkauff. (Plate X. fig. 5.)

*S. coronata*, Weink. in Journ. de Conchyl. x. p. 348.

*S. algeriana*, id. in op. cit. xiv. pp. 241, 247.

'Porcupine' Exp. 1870: Atl. St. 17a, 26-34, 36; Med. 50, Adventure Bank.

*Distribution.* C. Breton (*de Folin*); and the Mediterranean coasts of Spain, Italy, and Algeria; 15-130 fms.

*Fossil.* Pliocene: Siena, Reggio, and Messina.

I do not agree with Hidalgo that this is the *S. uncinaticosta* of d'Orbigny (Moll. Cuba, pl. xi. f. 25-27), which is described as "rosea, anfractibus 9, costis 11 crassis, inæqualibus." After a careful examination and comparison of Weinkauff's descriptions of his *S. algeriana* and *S. schultzi* with each other as well as with his typical specimens of those species, I have failed to make out any difference between them. Both have the interstices of the ribs spirally or transversely striated in the same manner. The present species also agrees with *S. pulchella* of Bivona in that respect; but the spiral striæ are finer and less distinct in *S. pulchella* than in *S. algeriana*, the longitudinal ribs are more than twice as many in the former as in the latter species, and the shape is rather conical instead of cylindrical. Another synonym of *S. algeriana* is *S. multilineata* of Philippi (Zeitschr. f. Mal.); but that name was pre-occupied by Say for a well-known North-American species. *Rissoa?* *coronata* of Seacchi, described and figured by Philippi in his work on the Mollusca of the two Sicilies, being the same species as *S. hellenica* of Forbes, perhaps *coronata* ought to replace *algeriana*; but it is immaterial.

7. SCALARIA NANA<sup>1</sup>, Jeffreys. (Plate X. fig. 6.)

SHELL conical, of a delicate texture, semitransparent, not glossy: *sculpture*, numerous and close-set curved lamellar ribs or ridges, of which there are about 30 on the body-whorl; the interstices are crossed by a few spiral striæ: the first 3 or 4 whorls are smooth

Dwarf.



and glossy: *colour* pale yellowish-white: *spire* short, abruptly tapering; apex pointed: *whorls* 7-8, convex; the last equals two thirds of the shell when placed in a supine position, and more than one third of the spire when the shell is placed with the mouth downwards: *suture* deep: *mouth* nearly round, slightly angular at the upper corner: *outer and inner lips* somewhat expanded; peristome continuous; there is a small umbilical chink between the inner lip and the pillar. L. 0.15. B. 0.075.

'Porcupine' Exp. 1870: Atl. St. 9, 16, 17, 17*a*, Setubal B., 26; Med. Adventure Bank.

*Distribution.* Bay of Biscay ('Travailleur' Exp. 1881); 1093 fms.

*Fossil.* Pliocene: Messina (*Seguenza*)!

I have compared this little species with the young of all the known species from the North Atlantic and the Mediterranean, and I am satisfied that it is distinct.

✓ 8. SCALARIA SEMIDISJUNCTA<sup>2</sup>, Jeffreys. (Plate X. fig. 7.)

SHELL corkscrew-shaped or forming a twisted cylinder, thin, semitransparent, and rather glossy: *sculpture*, numerous and close-set flexuous and sharp lamellar ribs, of which there are about 20 on the body-whorl; the first 3 or 4 whorls are smooth and regular; the ribs as well as their interstices are crossed by equally numerous, but very fine spiral striæ: *colour* pale yellowish-white: *spire* elongated or drawn out, and gradually tapering; apex conical and mammillar; *whorls* 7-8, convex, angular, and spinous (*muricei*) at the top of each; the last nearly equals one half of the shell when placed on its back, and between one third and one fourth of the spire in a reversed position: *suture* deeply excavated: *mouth* circular, with a slight angularity at the upper corner: *outer and inner lips* thin-edged, the latter being expanded, and folded back on the pillar; peristome continuous or complete; no umbilical chink. L. 0.5. B. 0.5.

'Porcupine' Exp. 1870: Atl. St. 16, 17, 17*a*. Three specimens of different sizes, and fragments of four other specimens.

*Distribution.* Azores ('Talisman' Exp. 1883); 2199 fms.

This very remarkable species has many of the characters belonging to the last species; but I do not think it can be a monstrous form of *S. nana*, because (in addition to other characters which may be observed by comparing the descriptions of both species) so many similar specimens and fragments of the present species occurred with the other species in the extraordinary haul off the coast of Portugal, which I noticed in my report of the second 'Porcupine' Expedition of 1870. See the 'Proceedings of the Royal Society' for that year, pages 155 and 156.

*S. disjuncta* of Brown from Castellarquato is described as having the last whorl furnished with a convex keel on the base.

<sup>2</sup> Half-disjoined.

## 9. SCALARIA CLATHRATULA, Adams.

*Turbo clathratulus*, Adams on the Microscope, t. 14. f. 19.

*S. clathratula*, B. C. iv. p. 96; v. p. 210, pl. lxxi. f. 5.

'Porcupine' Exp. 1870: Atl. St. 2, 3, 3a, 9, Vigo B., 16 (and var. *producta*), 17a, 26-29 (and var. *spinosa*), 30, Tangier B., Gibraltar B.; Med. Benzert Road.

*Distribution*. Bohuslän, Shetland to the Channel Isles, France, Spain, Portugal, Italy, Algeria, Morocco, Madeira, and New England; 0-681 fms. Apparently not Belgium, as stated by M. de Malzine under the name of *S. pulchella* of Philippi and Kiener.

*Fossil*. Pliocene: English and Belgian Crags, Biot, Nice, Monte Mario, and Messina. Not Miocene, as *S. clathratula* of Hörnes, which is evidently a different species.

This was confounded by me as well as by many other writers with *S. pulchella* of Bivona. That species attains to a larger size and is proportionately broader; the ribs are much more numerous and crowded, and their interstices are closely and regularly striated in a spiral direction. Neither Bivona nor Philippi noticed the spiral striæ. The present species is *S. soluta* of Tiberi (Journ. de Conch. 1863), and *S. dalliana* of Verrill and Smith.

The variety *spinosa* from Stations 26 to 29 of the 1870 Expedition has a spine at the top of each rib below the suture. It is analogous to the variety *loveni* of *S. grænlandica*. Other species and varieties are also crested in the same manner. In some specimens of the present species the ribs are more numerous than in others. The variety *producta* from Station 16 of the same Expedition has a longer spire and twice the usual number of ribs.

## ✓ 10. SCALARIA FRONDOSA, J. &amp; J. D. C. Sowerby.

*S. frondosa*, Min. Conch. vol. vi. (1829), p. 149, t. 577. f. 1.

*S. soluta*, Tiberi in J. de Conch. (1868), pl. vi. f. 3.

'Porcupine' Exp. 1870: Atl. St. 17, 24, 26-29, 36; Med. Rasel Amoush, Adventure Bank, 58.

*Distribution*. Bay of Biscay (*de Folin*), throughout the Mediterranean (*Tiberi* and others), off Madeira ('Travailleur' Exp. 1882); 20-547 fms.

*Fossil*. Pliocene: Red and Coralline Crag, and from Piacenza to Ficarazzi in Italy. Probably not the Antwerp Crag as *S. frondosa* of Nyst.

To show the number of synonyms which encumber certain species like the present, being peculiar and not generally known, I may instance the following as appertaining to *S. frondosa*:—*S. Celesti*, Aradas, *S. pumila*, Libassi, *S. rugosa*, Costa, *S. crispa*, Scacchi (not Lamarck), *S. eximia*, v. Pecchioli, *S. Pecchioliana*, Issel, and *S. Gravitellensis*, Seguenza, besides *S. soluta*, Tiberi (1868, not 1863). *S. foliacea* of Searles Wood appears to be a variety of the present species. I have already alluded to the possibility of Risso's bad figure of his *S. muricata* being intended to represent *S. frondosa*; Risso's publication was three years older than Sowerby's.

The interstices of the ribs in this species are regularly and distinctly striated in the direction of the spire. My largest specimen from the 'Porcupine' Expedition is three quarters of an inch in length by nearly half an inch in breadth.

I have also from Rasel Amoush fragments of a species which appears to be *S. frondicula* of Searles Wood. That species is more slender and has more ribs than *S. frondosu*. As a Pliocene fossil it occurs in the Coralline Crag of Suffolk, the Antwerp Crag, and at Reggio in Calabria. Monterosato gives Palermo and S. Vito for *S. frondicula* as a recent or living species.

✓ 11. SCALARIA TREVELYANA, Leach.

*S. trevelyana* (Leach, MS.), Winch on the Geology of Lindisfarn, in Ann. Phil. new series, iv. p. 434: B. C. iv. p. 93; v. p. 209, pl. lxxi. f. 4.

'Porcupine' Exp. 1869: St. 1, 2, 3, 6, 9, 14, 15, 18, 25, 35, 45, 68, off Lerwick. 1870: Atl. 2, 17a, 27-28½.

*Distribution.* Bergen to the Bay of Biscay; 15-645 fms.

*Fossil.* Miocene?: Malaga. Pliocene: Red and Norwich Crag, Biot, and Italy.

*S. pseudopulchella* of Seguenza.

12. SCALARIA COMMUNIS, Lamarck.

*S. communis*, Lam. An. s. Vert. vi. (2), p. 228: B. C. iv. p. 91, pl. ii. f. 3; v. pl. lxxi. f. 3.

'Porcupine' Exp. 1869: St. Donegal B. 1870: Atl. C. Sagres: Med. Algeciras B., Adventure Bank.

*Distribution.* Finmark (*Lilljeborg*) and western coast of Norway to the Ægean Sea, Adriatic, Canaries; living between tide-marks to 49 fms.

*Fossil.* Miocene: Bordeaux Basin. Pliocene: Red Crag, Nice, and Italy. Post-tertiary: Norway, Cumbrae, Ireland, West Cheshire, Selsea, S. France, Leghorn, Vesuvius, and Morea: 0-50 ft.

*Turbo clathrus* of the 'Fauna Suecica,' and of the 10th and preceding editions of the 'Systema Naturæ.' Petit therefore named the present species *S. clathrus*, which is more correct than *S. communis* according to the recognized laws of nomenclature.

✓ 13. SCALARIA GRÆNLANDICA, Chemnitz.

*Turbo clathrus grænlandicus*, Chemn. Conch. Cab. xi. p. 155, t. 195 A. f. 1878, 1879.

*S. grænlandica*, B. C. iv. p. 97.

'Lightning' Exp. St. 2.

'Porcupine' Exp. 1869: St. 65. A living specimen from the last Station (345 fathoms) was nearly two inches long. The animal having been put into boiling water was removed from the shell and kept in spirit of wine; it then gave out a deep violet dye, which did not fade for many years.

*Distribution.* Arctic and northern seas in both hemispheres, southwards to Christianiafiord in Europe and to New England in America, Barentz Sea, and Behring Strait; 8–160 fms. Mr. McAndrew dredged a fresh-looking fragment in 38 fathoms off Duncansby Head in Caithness.

*Fossil.* Pliocene: Newer Crags in our eastern counties. Post-tertiary: Sweden, Aberdeenshire, Bridlington, and Canada.

The uppermost part of the spire is formed of two or three nearly cylindrical and quite smooth whorls; the point or apex is rather blunt and twisted. In a North-American specimen, from which part of the apex had been broken off during the lifetime of the animal, the fracture had been mended and the exposed opening filled by a small convex shelly plug.

It is the *S. subulata* of Couthouy, not of Sowerby's 'Mineral Conchology.'

#### 14. SCALARIA TURTONÆ (*turtonis*), Turton.

*Turbo turtonis*, Turt. Conch. Dict. p. 208. f. 97.

*S. turtonæ*, B. C. iv. p. 89; v. pl. lxxi. f. 2.

'Porcupine' Exp. 1870; Atl. St. C. Sagres; Med. 50 (fragment).

*Distribution.* Loffoden I. to the Ægean, Adriatic, Madeira, and Cape Verd I.; 5–45 fms.

*Fossil.* Pliocene: Red and Norwich Crag, Nice, Central and Southern Italy. Post-tertiary: West of Scotland, Ireland, S. France, Leghorn, and Rhodes.

This species might be the *Turbo ambiguus* of Linné, but for the character "*basi umbilicata*." The best known of several synonyms is *S. tenuicostata* of Michaud.

In that admirable periodical the 'Journal de Conchyliologie' for January 1868 (which contains a review of the 4th volume of 'British Conchology') the Editor, M. Crosse, objected to the specific name *turtonæ*, because it was that of the describer, Dr. Turton; and he remarked that I had not done well to change the original name *turtonis* for *turtonæ*, "sous prétexte que Turton a eu l'intention de donner à l'espèce, non pas son propre nom, mais celui de sa fille." But Dr. Turton, in his 'Conchological Dictionary' (p. 208) expressly gives the credit of discovering this species to his daughter, adding "whose name we have attached to it." That specific name has been adopted and used by all British conchologists, and it is at all events more justifiable than the names proposed by Mr. Clark and Dr. Gray in honour of their wives, and by the old Italian geologist Gioeni in honour of himself. The termination of the specific name in the present case is in strict accordance with the usual custom. By the rules of biological nomenclature, which were framed and adopted by the British Association for the Advancement of Science, specific names may be changed when their meaning is "glaringly false" or they have not been clearly defined. But neither of these objections is applicable to the present case.



## ✓15. SCALARIA ACUS, Watson. (Plate X. fig. 8.)

*S. acus*, Wats. in Journ. Linn. Soc. (Zoology), 1883, vol. xvi. p. 608

'Porcupine' Exp. 1870: Atl. St. 16, 17, 31-34.

*Distribution*. Sicily (*Monterosato*), west of Azores and Culebra I. ('Challenger' Exp.) ('Talisman' Exp. 1883); 49-1254 fms.

*Fossil*. Pliocene: Ficarazzi (*Monterosato*).

Every specimen of this pretty little shell which I have seen is spirally or transversely striated, a character unnoticed in Mr. Watson's description. In one of the 'Challenger' specimens from the Azores, fine spiral striæ are perceptible only in the interstices of the ribs; but in the fragment from Culebra Island, as well as in the perfect specimen now figured and the fragments from the 'Porcupine' Expedition, these striæ are stronger and cross the ribs. All the specimens have a basal ridge and a similar apex.

✓16. SCALARIA TENERA<sup>1</sup>, Jeffreys. (Plate X. fig. 9.)

SHELL inclined to cylindrical, thin, semitransparent, and glossy: *sculpture*, numerous slight, curved or somewhat flexuous, and rounded but not prominent ribs, of which there are from 25-30 on the penultimate whorl, those on the last whorl being indistinct or wanting; the ribs are more sharp on the upper whorls; all are crossed by a few delicate and also rounded spiral striæ, which are more conspicuous at the base of each whorl: *colour* whitish: *spire* slender and gradually tapering: *whorls* 10-12, convex: *suture* deep: *mouth* more round than oval, obtuse-angled at the upper corner: *outer lip* thin, expanded at the base: *inner lip* reflected on the pillar and forming with the outer lip a continuous peristome; behind it is a small umbilical chink. L. 0.5 (circa). B. 0.15.

'Porcupine' Exp. 1870: Atl. St. 16. Four fragmentary or imperfect specimens only, but sufficiently characteristic for description and figuring.

17. SCALARIA COARTATA<sup>2</sup>, Jeffreys.

*S. obtusicostata*, G. O. Sars, Moll. arct. Norv. p. 194, t. 22. f. 9, a, b.

*S. varicosa*, id. l. c. p. 348, t. 34, f. 9, a-c.

'Porcupine' Exp. 1870: Atl. St. 16. An imperfect specimen.

*Distribution*. Vadsö and Moldö (*G. O. Sars*); 100-150 fms.

Having lately, through the accustomed courtesy of the eminent Norwegian Professor, had an opportunity of re-examining his two specimens which he had described and figured as *S. obtusicostata* and *S. varicosa* on my authority, and having carefully compared them with each other as well as with Searles Wood's and Brocchi's types of the above-named species, I am now convinced that I was mistaken in suggesting the identification of the Norwegian with those fossil species and that both his specimens belong to one and the same species. He quite agrees with me in the latter determination, as well as in adopting the name which I have ventured to

<sup>1</sup> Delicate.

<sup>2</sup> Contracted or narrowed.

propose. I much regret that I was the cause of his having been misled in the first instance.

✓ 18. *SCALARIA FORMOSISSIMA*<sup>1</sup>, Jeffreys. (Plate X. fig. 10.)

SHELL slender, exceedingly thin and of a delicate texture, nearly transparent, and rather glossy: *sculpture*, numerous crowded and slight, obliquely flexuous ribs (40–50 on the body-whorl), which are regularly and closely decussated by thread-like spiral striæ, causing the whole surface of the shell to appear shagreened or roughened by a file; the four uppermost or apical whorls are obliquely and closely striated lengthwise but not spirally; the base and infrasutural portion of each whorl is more or less distinctly keeled: *colour* milk-white; apical whorls reddish-brown: *spire* elegantly and gradually tapering; apex sharply pointed: *whorls* 12, convex, but angular on the upper part of each: *suture* very deep: *mouth* roundish, angulated below: *outer lip* very thin: *inner lip* expanded and somewhat inflected: *umbilicus* small and narrow, but conspicuous. L. 0.6. B. 0.2.

‘Porcupine’ Exp. 1870: Atl. St. 16, 17a. One lovely specimen, now figured, and a few others more or less perfect, but much smaller.

*Distribution*. Josephine Bank (‘Josephine’ Exp.), Azores (‘Talisman’ Exp. 1883); 340–1514½ fms.

The shell is so very delicate and almost transparent that the purple dye which was emitted by the animal is clearly visible through one of my specimens.

The imperfect and unsatisfactory notice given by the Marquis de Monterosato of his *S. striatissima* may apply to the present species or to *S. algeriana*. If the first-named species were the same as this, I should have been glad to adopt the name which he proposed in spite of *striatissima* not being a classical word; but the author, although an old friend, has not shown the usual courtesy of complying with my repeated request to be allowed to see a specimen of several Mediterranean species which he has merely named, without properly describing any of them. Such names must therefore be treated as manuscript.

✓ 19. *SCALARIA PUMICEA*, Brocchi.

*Turbo pumiceus*, Broc. Conch. foss. Subap. ii. p. 380, t. vii. f. 3.

*S. serrata*, Calcara, Conch. foss. d’Altavilla, p. 47, t. ii. f. 4.

‘Porcupine’ Exp. 1870: Atl. St. Gibraltar B.

*Distribution*. Sicily, Algeria, Madeira, and Canaries.

*Fossil*. Miocene: Vienna and Bordeaux Basins. Pliocene: Coralline Crag and Italy.

*S. varicosa* of Lamarck and other synonyms of palæontologists.

20. *SCALARIA HELLENICA*, Forbes.

*S. hellenica*, Forb. Rep. Æg. Inv. (1844), p. 189.

*Rissoa? coronata* (Scacchi), Philippi, Moll. Sic. ii. (1844), p. 127, t. xxiii. f. 7.

‘Porcupine’ Exp. 1870: Atl. St. 30; Med. 15, Rascl Amoush, off Rinaldo’s Chair.

<sup>1</sup> Most beautiful.

*Distribution.* From Nice to the Archipelago and the coast of Dalmatia, Madeira, and Canaries off Sahara ('Talisman' Exp.); 40-1261 fms.

*Fossil.* Miocene: Vienna Basin.

*S. scacchii* of Hörnes and *S. crassilabrum* of G. B. Sowerby. Not *S. coronata* of Lamarck. Although the Report of Prof. Forbes and the second volume of Dr. Philippi's work bear the same date, the former was published in 1843 at the Annual Meeting of the British Association for the Advancement of Science, and appeared in the 'Athenæum' and other periodicals of that year. I therefore consider that the specific name given by Forbes is entitled to priority.

The first whorls in this species, as is mostly the case in the genus *Scalaria*, are smooth and polished, forming a sharp spike of a reddish-brown colour.

✓ 21. SCALARIA CRENATA, Linné.

*Turbo crenatus*, L. S. N. p. 1238; Chemn. Conch. Cab. xi. p. 156, t. 195 A. f. 1880, 1881.

*S. crenata*, G. B. Sowerby, Thesaurus Conchyliorum, i. pl. xxxv. f. 123.

'Porcupine' Exp. 1870: Atl. St. Gibraltar B.

*Distribution.* Herm in the Channel Isles, a small and worn specimen (*F. C. Lukis*)!, Atlantic coasts of France and Spain (*de Folin*), Mediterranean, Mogador, and Canaries (*McAndrew*); 3-50 fms.

The body of this mollusk is of a yellowish hue mottled with white; the snout or rostrum is thick and strong; the tentacles are spike-shaped, rather long and slender, of a yellowish colour; the eyes are small and black, seated on a slight prominence near the outer base of each tentacle; the foot is thick and short. Animal shy or easily alarmed.

ACIRSA PRÆLONGA, Jeffreys. (Plate X. fig. 11.)

*A. prælonga*, Jeffr. in Ann. & Mag. N. H. 1877, p. 241.

'Porcupine' Exp. 1870: Atl. St. 16. A single specimen.

*Distribution.* 'Valorous' Exp. St. 12; 1450 fms. Also a single specimen from that Expedition.

SUMMARY OF THE FOREGOING LIST.

Families.	Genera.	Number of Species.
IX. LITTORINIDÆ ( <i>continued</i> )	RISSEA . . . . .	42
	HYDROBIA . . . . .	2
X. PALUDINIDÆ . . . . .	BITHYNIA . . . . .	1
XI. HETEROPHROSYNIDÆ . . . . .	BARLEEIA . . . . .	1
XII. SKENEIDÆ . . . . .	HOMALOGYRA . . . . .	1
XIII. VERMETIDÆ . . . . .	SILIQUARIA . . . . .	1

Families.	Genera.	Number of Species.
XIV. TURRITELLIDÆ .....	STILBE .....	1
	TURRITELLA....	2
	MESALIA .....	1
XV. SCALARIIDÆ .....	SCALARIA .....	21
	ACIRSA .....	1
	Total....	74

## · FOURTH SUPPLEMENT.

I have been indebted to the kindness of Dr. Fischer for an opportunity of examining the Mollusca which were procured last summer by the deep-sea exploration in the French Government steamer 'Talisman' off the west coast of Spain and the coasts of Marocco, Senegal, Sahara, Cape de Verd Isles, Canaries, and Azores. This examination will be seen to have greatly enriched the present Supplement. I also wish to recognize the laborious care taken by the Marquis de Folin in his "trriage" of the sifted material from the deep dredgings in this Expedition.

## Part I., P. Z. S. 1878:—

- Page 401. *Terebratulula caput-serpentis*. Off Marocco, the typical form ('Talisman' Exp.); 65 fms. *Fossil*. Miocene: Madeira (*Mayer*). Pliocene: Siena (*Pantanelli*).
- „ *Terebratulula tuberata*. Off Marocco and Sahara ('Talisman' Exp.); 330-1261 fms.
- P. 404 *Terebratulula vitrea*, var. *minor*: off C. St. Vincent; var. *sphenoides*: off Marocco ('Talisman' Exp.); 298-818 fms.
- P. 407. *Terebratulula septata*. Off Marocco, Sahara, and Canaries ('Talisman' Exp.); 331½-861 fms.
- P. 411. *Platydia anomioides*. Off Sahara ('Talisman' Exp.); 347-478 fms. *Fossil*. Pliocene: Sicily (*Seguenza*).
- „ *Megerliu truncata*. Off Marocco and Canaries ('Talisman' Exp.); 50-65 fms. As usual, abundant.
- P. 402. *Atrertia gnomon*. Off Marocco and Azores ('Talisman' Exp.); 1192-2199 fms.
- P. 413. *Rhynchonella sicula*. Off C. St. Vincent ('Talisman' Exp.); 57½ fms. Plentiful.
- P. 414. *Crania anomata*. Off the Sahara ('Talisman' Exp.); 1261 fms.
- P. 415. *Discina atlantica*. Off Marocco ('Talisman' Exp.); 1192 fms.

## Part II., P. Z. S. 1879:—

- P. 554. *Anomia ephippium*. *Fossil*. Miocene: Madeira (*Mayer*).
- P. 555. *Anomia patelliformis*. Off Azores ('Talisman' Exp.); 43-76 fms.
- P. 556. *Pecten pusio*. Off Canaries ('Talisman' Exp.); 99-188 fms.



- P. 557. *Pecten pes-felis*. Off Canaries and C. Verd I. ('Talisman' Exp.); 88-134 fms. Very large. *Fossil*. Miocene: Madeira (*Mayer*).
- P. 558. *Pecten philippii*. Off Canaries and Azores ('Talisman' Exp.); 43-76 fms.
- P. 560. *Pecten testæ*. Off Azores ('Talisman' Exp.); 43-76 fms. *Fossil*. Pliocene: Siena (*Pantanelli*).
- „ *Pecten similis*. *Fossil*. Pliocene: Siena (*Pantanelli*).
- P. 561. *Pecten vitreus*. Off Marocco and Sahara ('Talisman' Exp.); 469-650 fms.
- „ *Amussium fenestratum*. Off C. Verd I. ('Talisman' Exp.); 268-335 fms.: and var. *cancellata*, off Azores (same); 1622-2199 fms.
- P. 562. *Amussium lucidum*. Off Marocco, Sahara, and Azores ('Talisman' Exp.); 650-1429 fms.
- P. 562. *Lima sarsii*. Bay of Biscay ('Travailleur' Exp. 1882); 249 fms. Off West coast of Africa ('Talisman' Exp.); 1254 fms.
- P. 563. *Lima subovata*. Off Marocco ('Talisman' Exp.); 1192 fms. According to Brugnone not fossil at Palermo, but the young of *L. elliptica*.
- P. 564. *Lima loscombi*. Off Azores ('Talisman' Exp.); 43-76 fms.
- „ *Lima hians*, var. *tenera*. Off Azores ('Talisman' Exp.); 43-76 fms.
- „ *Lima excavata*. Off Sahara ('Talisman' Exp.); 185 fms. Fresh and apparently recent valves of an unusually large size, equal to that of the fossil specimens which Prof. Seguenza noticed from the Pliocene or Post-tertiary formation in Calabria and Sicily and named *L. gigantea*.
- P. 568. *Modiolaria nigra*. Norway (*Storm*); 3-4 fms.
- P. 569. *Dacrydium vitreum*. Off West coast of Africa ('Talisman' Exp.); 478 fms. *Fossil*. Post-tertiary: Greenock (*Steel*).
- P. 570. *Arca lactea*. *Fossil*: Miocene: Madeira (*Mayer*).
- „ *Arca nodulosa*, var. *scabra*. Off West coast of Africa ('Talisman' Exp.); 754 fms.
- P. 571. *Arca tetragona*. Off Azores ('Talisman' Exp.); 43-76 fms.
- „ *Arca noæ*. *Fossil*. Miocene: Madeira (*Mayer*).
- „ *Arca antiquata*. Off Marocco ('Talisman' Exp.); 32½ fms.
- P. 573. *Arca frielei*. Off Marocco ('Talisman' Exp.); 635 fms.
- P. 574. *Leda minuta*. Norway (*Storm*); 300 fms.
- P. 575. *Leda fragilis*. Bay of Biscay ('Travailleur' Exp. 1882); 249 fms.
- „ *Leda arctica*. Post-tertiary: N.W. Germany (*Torell*).
- P. 576. *Leda messanensis*. Off Marocco and the Azores ('Talisman' Exp.); 452-1514½ fms.

- P. 578. *Leda striolata*. Off West coast of Africa ('Talisman' Exp.); 452-1254 fms.  
 „ *Leda pusio*. Off Marocco ('Talisman' Exp.); 753-1192 fms.
- P. 579. *Leda jeffreysi*. Off West coast of Africa and the Azores ('Talisman' Exp.); 452-2199 fms.  
 „ *Leda subæquilatera*. Off Azores ('Talisman' Exp.); 1622 fms.
- P. 580. *Leda micrometrica*. Mediterranean (*Nares*); 150-300 fms.  
 „ *Leda insculpta*, var. *levis*; nearly smooth. Off Azores ('Talisman' Exp.); 2199 fms.
- P. 581. *Leda minima*. Off Sahara ('Talisman' Exp.); 1261 fms.  
 „ *Nucula ægeensis*. Off Sahara ('Talisman' Exp.); 1261 fms.
- P. 582. *Nucula corbuloides*. Mediterranean (*Nares*); 150-300 fms.  
 „ *Nucula tumidula*. Off West coast of Africa ('Talisman' Exp.); 681 fms.
- P. 583. *Nucula sulcata*. Bay of Biscay ('Travailleur' Exp. 1882); 249 fms.
- P. 585. *Limopsis aurita*. Off Marocco and Sahara ('Talisman' Exp.); 599-1429 fms. Very large from latter station.  
 „ *Limopsis cristata*. Off Marocco ('Talisman' Exp.); 658-861 fms.  
 „ *Limopsis minuta*. Off Marocco ('Talisman' Exp.); 298-650 fms.
- P. 586. *Malletia obtusa*. Off Marocco and Senegal ('Talisman' Exp.); 298-1733 fms.  
 „ *Malletia cuneata*. Off Marocco and Sahara ('Talisman' Exp.); 599-1733 fms.

## Part III., P. Z. S. June 1881 :—

- P. 696. *Decipula ovata*. Off West coast of Africa ('Talisman' Exp.); 1254 fms.
- P. 699. *Lasæapumila*. Off Azores ('Talisman' Exp.); 1514½ fms.
- P. 701. *Lucina spinifera*. Off Canaries ('Talisman' Exp.); 99-188 fms.  
 „ *Lucina borealis*. Off Azores ('Talisman' Exp.); 43-76 fms.  
 „ *Axinus flexuosus*, var. *polygona*. Off Sahara ('Talisman' Exp.); 1261 fms.
- P. 703. *Axinus croulinensis*. Off West coast of Africa ('Talisman' Exp.); 452-1254 fms.  
 „ *Axinus ferruginosus*. Off Sahara ('Talisman' Exp.); 452-1261 fms.
- P. 704. *Axinus subovatus*. Off Sahara ('Talisman' Exp.); 1261 fms.  
 „ *Axinus cycladius*. Off Sahara and Azores ('Talisman' Exp.); 1261-1622 fms.

- P. 705. *Cardita aculeata*. Off Marocco ('Talisman' Exp.); 95 fms.
- P. 706. *Cardium aculeatum*. Drontheim (*Storm*). A specimen 82 mm. (more than 3 inches) in size.
- P. 707. *Cardium papillosum*. Off Canaries and Azores ('Talisman' Exp.); 43-188 fms.
- P. 708. *Cardium fuscium*. Bay of Biscay ('Travailleur' Exp. 1882); 249 fms.
- P. 710. *Isocardia cor*, fry. Off Senegal and West coast of Africa ('Talisman' Exp.); 1192-1733 fms.
- P. 711. *Astarte sulcata*. Off Marocco (typical, intermediate, and variety *fusca*); 95 fms. Off Canaries (typical); 99-188 fms. 'Talisman' Exp. 1883.
- P. 713. *Circe minima*. Gibraltar B.; living in 3 fms.
- P. 714. *Venus rudis*. Off Marocco and Canaries ('Talisman' Exp.); 65-188 fms.
- „ *Venus effossa*. Off Marocco, Canaries, and Azores ('Talisman' Exp.); 43-188 fms.
- P. 715. *Venus multilamella*. Off Marocco ('Talisman' Exp.); 32½ fms.
- „ *Venus casina*. Off Canaries and Azores ('Talisman' Exp.); 43-113 fms.
- P. 718. *Tellina balaustina*. Off Marocco ('Talisman' Exp.); 65 fms.
- P. 720. *Tellina compressa*. BODY whitish: mantle having its fringed margin protruded beyond the edges of the valves: tubes 8-sided, as in *Tellina* and *Psammobia*; they are bulbous at the extremities. Off C. Sagres, in 45-58 fms.
- „ *Tellina serrata*. Off Marocco ('Talisman' Exp.); 32½ fms.
- P. 722. *Psammobia ferroensis*. Off Azores ('Talisman' Exp.); 43-76 fms.

Part IV., P. Z. S. November 1881:—

- P. 922. *Amphidesma castaneum*. Off Azores ('Talisman' Exp.); 43-76 fms. Off C. de Verd I. (same Exp.); 1977 fms.
- P. 926. *Scrobicularia longicallus*. Off C. Spartel, Marocco, Sahara, and Azores ('Talisman' Exp.); 337-2199 fms. It seems a pity that the worthless and nonsensical name *Syndosmya* should be retained by some conchologists for species of the established and consistent genus *Scrobicularia*. I have already endeavoured to show that *Syndosmya* is not founded on a single valid character and that it is long subsequent in point of date to Leach's generic name *Abra*, as well as to *Erycina* of Lamarek, which is apparently the same genus.
- „ *Scrobicularia alba*. Off Marocco and Azores ('Talisman' Exp.); 470-681 fms.

- P. 930. *Lyonsia formosa*. Off West coast of Africa ('Talisman' Exp.); 452-731 fms.
- P. 932. *Pecchiolia subquadrata*. Off Sahara ('Talisman' Exp.); 681-1261 fms. I overlooked other 'Porcupine' Stations for this species, viz. 1869: St. 16, 17. These specimens are larger than the size given in the description.
- „ *Pecchiolia insculpta*. Off West coast of Africa and Azores ('Talisman' Exp.); 478-681 fms. Very large and fine specimens.
- P. 933. *Pecchiolia angulata*. Off Marocco and Sahara ('Talisman' Exp.); 617-781 fms. An extraordinarily large valve from the latter station.
- „ *Pecchiolia acuticostata*. Off Marocco ('Talisman' Exp.); 650 fms. A large valve.
- P. 937. *Neæra subtorta*. Fossil. Post-tertiary: Garvel Park, Greenock (Scott and Steel).
- P. 938. *Neæra cuspidata*. Off Marocco ('Talisman' Exp.); 95-138 fms.
- „ *Neæra gracilis*. Off Marocco ('Talisman' Exp.); 599-1300 fms.
- „ *Neæra rostrata*. Off Marocco and Azores ('Talisman' Exp.); 470-1137 fms.
- P. 940. *Neæra depressa*. Off Sahara and the West coast of Africa ('Talisman' Exp.); 452-1261 fms.
- „ *Neæra lamellosa*. Off Sahara ('Talisman' Exp.); 1261 fms.
- P. 941. *Neæra contracta*. Off Marocco and Azores ('Talisman' Exp.); 1192-1622 fms. Mr. Dall now refers this species to his *N. limatula*, described in the Bulletin of the Museum of Comparative Zoology, vol. ix. No. 2, p. 112. His report is dated December 5, 1881. But in that description he says that his species is clearly not one of mine. He has since had an opportunity of comparing the types of both species.
- „ *Neæra semistrigosa*. Referred by Mr. Dall to his *N. lamellifera* in the same publication. My publication is dated Nov. 29, 1881.
- P. 942. *Neæra circinata*. Off Marocco ('Talisman' Exp.); 1138-1190 fms. Very fine specimens.
- „ *Neæra ruginosa*. Off West coast of Africa ('Talisman' Exp.); 452-1254 fms.
- P. 943. *Neæra curta*. Behring Sea ('Vega' Exp.); 65 fms., as *N. behringensis* of Dr. Leche. The sculpture of all the ribbed species of this genus is variable.
- P. 944. *Neæra striata*. Off Marocco ('Talisman' Exp.); 452-861 fms.
- P. 945. *Mya truncata*. Off C. St. Vincent ('Talisman' Exp.); 56 fms. A fresh-looking valve of a young specimen.



- P. 946. *Panopea plicata*. Madeira (*Watson*); 20 fms.; off Sahara ('Talisman' Exp.); 1261 fms.  
 P. 947. *Pholas candida*. Drontheim (*Storm*).

## Part V., P. Z. S., 1882:—

- P. 656. *Dentalium dentalis*. *Fossil*. Post-tertiary: Selsea.  
 P. 657. *Dentalium panormitanum*. C. St. Vincent, and off Senegal ('Talisman' Exp.); 32½–1723 fms.  
 P. 658. *Dentalium capillosum*. Off West coast of Africa and Azores ('Talisman' Exp.); 681–2711 fms. Very large and perfect from the latter locality.  
 „ *Dentalium candidum*. Off Marocco, Sahara, and Canaries ('Talisman' Exp.); 629–1429 fms. Very large and fine specimens.  
 „ *Dentalium agile*. Off C. Spartel, Marocco, Sahara, and Azores ('Talisman' Exp.); 337–650 fms. Very fine specimens.  
 P. 659. *Dentalium striolatum*. Bay of Biscay ('Travailleur' Exp.); 1062 fms. My note of the animal (as *D. abyssorum*) from 370 fathoms in the 'Porcupine' Expedition of 1869, is as follows:—"BODY cream-colour: mantle thick, with jagged but not ciliated edges: foot cylindrical and terminating in a conical point; lobes expansile, slightly scalloped at the edges; the upper part of the foot is pale yellowish brown: tentacles (or captacula) numerous, extremely slender and thread-like, with bulbous tips."  
 „ *Dentalium entalis*. Varangerfjord ('Coligny' Exp.).  
 P. 660. *Dentalium filum*. Off Sahara ('Talisman' Exp.); 1261 fms. A remarkably large and fine specimen.  
 P. 661. *Siphodentalium affine*. Off Azores ('Talisman' Exp.); 2199 fms.  
 P. 662. *Siphodentalium quinquangulare*. Bay of Biscay ('Travailleur' Exp.); 733 fms.  
 P. 663. *Cadulus olivi*. Off Senegal and West coast of Africa ('Talisman' Exp.); 470–1733 fms. A fine specimen from this Expedition has a double notch and corresponding points at the apex, as in *C. jeffreysi*. See the 5th volume of 'British Conchology,' p. 197.  
 „ *Cadulus gracilis*. Bay of Biscay ('Travailleur' Exp.), off West coast of Africa and Azores ('Talisman' Exp.); 681–1622 fms.  
 P. 664. *Cadulus cylindratu*s. Off Azores ('Talisman' Exp.); 2199 fms.  
 „ *Cadulus propinquus*. Palermo (*Monterosato*), Bay of Biscay ('Travailleur' Exp.), off Marocco ('Talisman' Exp.); 108–1192 fms.  
 „ *Cadulus subfusiformis*. Off West coast of Africa ('Talisman' Exp.); 1254 fms.

- P. 665. *Cadulus jeffreysi*. Off West coast of Africa ('Talisman' Exp.); 478 fms.  
 ,, *Cadulus tumidosus*. Off Marocco and West coast of Africa ('Talisman' Exp.); 478-1254 fms.
- P. 668. *Chiton alveolus*. G. St. Lawrence (*Whiteaves*), G. Maine (*Verrill*); 150-200 fms.
- P. 673. *Addisonia eccentrica*. Off Sardinia ('Washington' Exp., 1881); 217 fms. As to the change of name from *excentrica* to *eccentrica* I would refer to my remarks in page 122 of this paper.  
 ,, *Lepetella tubicola*. A picturesque group of eight specimens, snugly resting in the hollow of an upper mandible of a large Cephalopod, was dredged last summer in the 'Talisman' Expedition off the Azores at the depth of 64 fathoms; and several specimens of apparently another and a larger species were also procured during the same Expedition off the Sahara in 1261 fathoms, and will be described by Dr. Fischer.
- P. 674. *Propilidium pertenu*. Off Sahara and West coast of Africa ('Talisman' Exp.); 1261 fms.
- P. 675. *Puncturella profundi*. Off Sahara ('Talisman' Exp.); 1261 fms.
- P. 680. *Emarginula multistriata*. Off Sahara ('Talisman' Exp.); 1261 fms.

## Part VI., P. Z. S. 1883:—

- P. 88. *Scissurella umbilicata*. Off Marocco ('Talisman' Exp.); 1192 fms.
- P. 89. *Molleria costulata*. Off Marocco ('Travailleur' Exp.); 1062 fms.  
 ,, *Molleria lævigata*. S.E. Greenland, 'Bulldog' Exp. (*Wallich*); 108 fms.
- P. 91. *Cyclostrema trochoïdes*. With the last.
- P. 93. *Cyclostrema bithynöides*. Palermo (*Monterosato*); 162½ fms.  
 ,, *Cyclostrema spheröides*. Off Marocco ('Travailleur' Exp.); 640 fms.  
 ,, *Tharsis romettensis*. Off Sahara ('Talisman' Exp.); 1261 fms.
- P. 98. *Trochus ottoï*. Off Marocco and Azores ('Talisman' Exp.); 631-1261 fms.
- P. 99. *Trochus suturalis*. Off Sahara ('Talisman' Exp.); 222-1261 fms.
- P. 102. *Trochus leucophæus*. After the words "omitted in" add "the index to."
- P. 105. *Trochus exasperatus*. Fossil. Miocene. Maine-et-Loire (*Bardin*).  
 ,, *Trochus wiseri*. Off Marocco ('Travailleur' Exp.); 1062 fms.

- P. 105. *Trochus miliaris*. *Fossil*. Miocene. Maine-et-Loire (*Bardin*).
- P. 106. *Trochus zizyphinus*. Off Azores ('Talisman' Exp.); 43-76 fms.
- P. 109. *Phasianella pulla*. Off Sahara ('Talisman' Exp.); 1261 fms. Most probably drifted.
- P. 110. *Cithna tenella*, and var. *costulata*. Off Marocco and Azores ('Talisman' Exp.); 681-1622 fms.
- P. 111. *Cithna carinata*. Off Sahara ('Talisman' Exp.); 1261 fms.
- P. 141. *Iphitus*. Another species was procured during the same Expedition of the 'Talisman' in 681 fathoms off the West coast of Africa.

## EXPLANATION OF THE PLATES.

## PLATE IX.

- Fig. 1. *Rissoa fischeri*, p. 113.  
 2. — *parvula*, p. 114.  
 3. — *subsoluta*, p. 115.  
 4. — *testæ*, p. 115.  
 5. — *angulata*, p. 119.  
 6. — *turricula*, p. 120.  
 7. — *deliciosa*, p. 121.  
 8. — *affinis*, p. 124.  
 9. *Hydrobia compacta*, p. 128.

## PLATE X.

- Fig. 1. *Homalogyra densicostata*, p. 129.  
 2. *Stilbe acuta*, p. 130.  
 3. *Scalaria longissima*, p. 132.  
 4. — *vittata*, p. 133.  
 5. — *algeriana*, p. 134.  
 6. — *nana*, p. 134.  
 7. — *semidisjuncta*, p. 135.  
 8. — *acus*, p. 139.  
 9. — *tenera*, p. 139.  
 10. — *formosissima*, p. 140.  
 11. *Acirsa praelonga*, p. 141.
-